# FINANCIAL DEVELOPMENT, INTEGRATION AND ACCESS TO FINANCE IN AFRICA

**Grace Etim Essien**

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**The University of Leeds**

**The Department of Economics**

**Leeds University Business School**

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The Candidate confirms that work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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**ABSTRACT**

This thesis is made up of three empirical studies that fall under the general classification of international and financial economics, particularly the study focuses on the financial system of selected African countries.

The first empirical study presented in Chapter 2 examines the role of financial development in improving the effect of FDI on the economic growth of some African countries. Investigations were conducted to pinpoint which financial structure could provide the best improvement by applying the bank-based vs. market-based debate. Results from the regression analysis conducted show that the effect of FDI on economic growth becomes significant only when financial development measures were factored in. Analysis of results indicate that development of the overall financial system of African countries would be more beneficial in comparison to developing either the banks or financial markets alone.

Chapter 3 empirically measures the level of financial integration in Africa's Regional Economic Communities (RECs) using beta and sigma convergence to measure the speed and degree of financial integration in four RECs. These chapter also theoretically examines how regional financial integration contributes to financial development and economic growth in Africa. Analysis of the results show that Africa's RECs are integrating at a relatively slow and diverse rate. Therefore, policy makers in Africa would need to focus on reform strategies that would strengthen financial integration in their regions. A fully financially integrated system would contribute immensely to financial development and promote sustainable economic growth.

The fourth chapter investigates the effect of access to finance on firms' productivity. Using cross-sectional firm-level data to estimate the effect of access to finance on labor productivity, total factor productivity (TFP), and the stochastic frontier trans-log model. This study estimates an instrumental variable (GMM) model to address potential endogeneity bias between access to credit and firms' productivity. The results obtained show that the lack of access to finance negatively affects the productivity of firms in Africa. This study suggests that the development of a balanced financial system should be of topmost priority to policy makers. This ensures that more finance is channeled towards those firms whose productivity depends heavily on the availability of finance irrespective of their characteristics. This would result in firms increasing their investments in productivity-enhancing activities, which would benefit long-term economic growth.

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**ABBREVIATIONS**

| | |
|---|---|
| **ABSA:** | Amalgamated Bank of South Africa |
| **ACM:** | Africa Common Market |
| **ADB:** | African Development Bank |
| **AEC:** | African Economic Community |
| **AMU:** | Arab Maghreb Union |
| **ASEAN:** | Association of Southeast Asian Nations |
| **AU:** | African Union |
| **BD** | Banking System Development Measures |
| **BIS:** | Business Innovation and Skills |
| **BOB:** | Bank of Botswana |
| **CARICOM:** | Caribbean Community |
| **CEMAC:** | Central African Economic and Monetary Community |
| **CEN-SAD** | Community of Sahel-Saharan States |
| **CMA:** | Common Monetary Area |
| **COMESA:** | Common Market for Eastern and Southern Africa |
| **CSE:** | Casablanca Stock Exchange |
| **DFD:** | Destination country's financial development |
| **DFE:** | Dynamic Fixed Effect |
| **EAC:** | Eastern African Community |
| **ECB:** | European Central Bank |
| **ECCAS:** | Economic Community of Central African States |
| **ECOWAS:** | ECOWAS: Economic Community of West African States |
| **ECU:** | Equatorial Customs Union |
| **EU:** | Eurozone |
| **ES** | Enterprise Survey |
| **FD:** | Overall Financial Development Measures |
| **FDI:** | Foreign Direct Investment |
| **FINDEX:** | The Financial Index Formula |
| **FS:** | Financial Structure |

| | |
|---|---|
| **FTA:** | Free Trade Areas |
| **GDP** | Gross Domestic Product |
| **GSE:** | Ghana stock exchange |
| **IGAD:** | Intergovernmental Authority on Development |
| **IMF:** | International Monetary Fund |
| **JSE:** | Johannesburg Stock Exchange |
| **LuSE:** | Lusaka Stock Exchange |
| **MNCs:** | Multinational companies |
| **NBFIs** | Nonbank Financial Institutions |
| **OCA:** | Optimum Currency Area |
| **ODA:** | Official Development Assistance |
| **OECD:** | Organisation for Economic Cooperation |
| **OTC:** | Over-The-Counter Market |
| **PCA:** | Principal Component Analysis |
| **R&D:** | Research and Development |
| **RECs:** | Regional Economic Communities |
| **RFI:** | Regional Financial Integration |
| **SACU:** | Southern African Customs Union |
| **SADC:** | Southern African Development Community |
| **SD** | Stock Market Development Measures |
| **SEM:** | Stock Exchange in Mauritius |
| **SMEs:** | Small and medium-sized enterprises |
| **SSA:** | Sub-Saharan African |
| **TFP:** | Total Factor Productivity |
| **UK:** | The United Kingdom |
| **UNCTAD:** | United Nations Conference on Trade and Development |
| **UNECA:** | United Nations Economic Commission for Africa |
| **US:** | The United States |
| **WAEMU:** | West African Economic and Monetary Union |
| **WAMZ:** | West African Monetary Zone |

# Chapter 1: INTRODUCTION

## 1.1 Background and Objectives of the Thesis

Africa has been recognised as the next frontier for economic development. The World Bank's 2015 Global Report states that Africa ranks behind North America as the second most attractive destination for investment. In Doing Business Ranking for 2015, amongst the top ten global improvers five[1] African countries were included. The continent of Africa has experienced a significant increase in the influx of investors seeking to invest mainly in non-commodities sectors such as manufacturing, financial services, and construction (Makhtar et al., 2015). For example, the inflow of Foreign Direct Investment (FDI) in 2015 was $60 billion, five times its level for 2000. Particularly, China, Turkey, and India have increased their investments in Africa and are the major job creators in the manufacturing sector (Makhtar et al., 2015).

However, despite the prospects of Africa, the continent faces major economic and social challenges. The 2016 Africa's prosperity report shows that the growth in Africa's economy is not consequently being transformed into higher levels of prosperity in individual countries. Besides being the least developed continent in the world, Africa remains the poorest region with negligible technological advancement, the most indebted, food-insecure, and marginalised region (UNECA, 2014). Almost two-thirds of Africans lack access to adequate infrastructure and basic human needs such as electricity, water, and food (UNECA, 2014).

According to the World Bank, one of the major challenges amongst others is the inability of Africa's financial system to promote economic growth that is sustainable and inclusive. A developed, integrated, competitive, and efficient financial system that is accessible to a wider range of a country's population is a fundamental requirement for sustaining economic growth and development. (Ndulu, 2007). Evidence from theoretical and empirical literature shows that the financial system plays a major role in sustaining economic growth, stimulating poverty reduction, and income equality (Levine 1997; Ndikumana 2001; Ndulu 2007; Goodhart 2016). However, although Africa's financial systems have made some remarkable improvement, it remains underdeveloped, shallow, unintegrated, and serves a limited number of people. This thesis focuses on three aspects of the financial system. The first two empirical studies use country-level data (macro) to explore the concept of financial development and integration

[1] Botswana, Kenya, Seychelles, South Africa, Uganda

respectively, and the third study uses firm-level data (micro) to examine how finance affects firms' productivity.

The first aspect of the financial system explored is financial development. The first empirical analysis examines the role of financial development in improving the effect of FDI on Africa's growth. The major contribution of this study is that it introduces a new dimension by applying the bank-based vs. market-based debate to determine which financial system would be more appropriate in improving this effect. In Africa, FDI is a major source of external finance and capital investment. Some of the benefits derived from the inflow of FDI include job creation, technology transfer, and spillover effects. However, these benefits do not accrue automatically as the condition of the host country is an important factor in determining how well a country benefits from FDI inflow (Alfaro et al., 2004).

According to Carp Lenuta (2013), the financial system is one of the main channels through which the benefits of FDI can be transmitted to the host country's economy. Alfaro et al., (2004) states that the nature of the host countries financial system determines how well they would be able to benefit from the inflow of FDI. The economic literature posits that in a well-functioning economy, there is the need for a financial system that promotes fund transfer between people who invest, lend, and borrow (United Nations Economic Commission for Africa, 2008). A developed financial system ensures that foreign investors have access to efficient financial services, and domestic firms can access external finance to meet the technological knowledge gaps generated through FDI inflow (Alfaro et al., 2003).

Beyond the analysis of the role of financial development, this study examines if the dominance of the bank-based system has an effect on how the benefits of FDI is accrued on economic growth in Africa. This study analysis the need for African countries to move from financial systems dominated by banks to a balanced financial system comprising of well-functioning and efficient banks and stock markets by applying the bank-based versus market-based debate. The results of the study show that in the absence of financial development measures, the effect of FDI on economic growth is positive but insignificant for the sampled countries. However, when financial development measures are factored in, FDI significantly and positively impacts economic growth. Furthermore, the results show that this positive effect would be improved if the overall financial system of African countries is developed compared to developing either the banks or financial markets alone.

Financial integration is the second aspect explored in the second empirical analysis. The first empirical analysis of this thesis suggests that the development of the overall financial system enhances the effect of FDI on economic growth, thereby promoting sustainable economic growth in Africa. However, Africa's financial systems remain underdeveloped, shallow, inaccessible, and lack depth (Yartey 2008; Allen et al., 2010). Hence, this observation supports the hypothesis that the underdeveloped nature of Africa's financial system could be contributing to its inability to benefit fully from FDI inflow and therefore enhance sustainable economic growth.

In an attempt to address the issue of underdeveloped financial systems in Africa, policymakers are beginning to recognise the need for pooling financial resources together. Studies by the World Bank and other financial institutions suggest that the promotion of regional financial integration (RFI) could potentially address the problems associated with the underdeveloped nature of Africa's financial system. Africa's regional economic communities (RECs) are beginning to establish sub-regional capital markets to overcome the limitations of their fragmented capital markets (United Nations Economic Commission for Africa, 2008). African countries are currently pursuing the agenda of regional financial integration and monetary union formation to promote sustainable economic growth and reduced poverty level.

The second empirical analysis measures the extent of regional financial integration in Africa's RECs using beta and sigma convergence to measure the speed and degree of financial integration. This study also theoretically examines the potential contribution of regional financial integration towards financial development and sustainable economic growth in Africa. The findings of this study show that the level of RFI in Africa's RECs is incomplete and uneven. The financial systems and economic conditions of Africa's RECs would be better off if they focus on strengthening regional financial integration in their regions and slow down on the agenda of monetary union formation.

The third empirical analysis explores the effect of the financial system at the micro level. Access to finance has been considered to be one of the important factors in influencing firms' real activities and in promoting aggregate growth. According to Beck et al., (2013), the productivity of firms is considered an important catalyst for growth and development in Africa. However, various factors such as skilled labour, stable energy supply, access to finance amongst others constrain firms' productivity. However, literature on the relationship between finance and firm-level productivity is almost non-existent for African countries. This study fills this gap using cross-sectional firm-level data from World Bank Enterprise Survey data from

17 African countries and 4682 firms from the period 2006-2014. The effect of access to finance on labour productivity, total factor productivity (TFP) and stochastic frontier Cobb-Douglas and translog model are analysed. Access to finance is captured using direct measures such as having a checking or savings account, the presence or absence of overdrafts and lines of credit.

The results obtained show that the lack of access to finance, especially overdraft facilities negatively affects the productivity of firms in Africa. Also, smaller firms and sole-proprietorships are mostly affected because they have less access to finance. Access to finance improves the number of start-ups, enables firms to benefit from growth and investment opportunities, and is essential for the daily operation and long-term sustenance of the firm (Beck et al., 2009). Therefore, African countries should strive to have developed financial systems that ensure the efficient allocation of finance to the appropriate firms irrespective of their characteristics.

### 1.2 Layout and Content of the Thesis

This thesis comprises of three separate but related empirical analyses. Chapter 2, 3, and 4 each form a self-contained study and have similar format. Chapter 2 examines the role of financial development in the FDI-growth Nexus. This chapter uses measures of financial development to construct overall financial development measure, banking system development measure, and stock market development measure. To estimate the role of financial development, each development measure is made to interact with the measure of FDI. The Dynamic fixed effect estimation method developed by Pesaran et al., (1999) with cross-correlated effect in the long run is employed to control for potential cross-sectional dependence and heterogeneity across panels.

Chapter 3 presents an analysis of the level of regional financial integration in Africa's RECs by measuring the extent of financial integration in Africa's Regional Economic Communities (RECs). This study uses 3-month interbank interest rate data for four RECs to measure the speed and degree of convergence using beta and sigma convergence respectively. This study also theoretically examines how regional financial integration could contribute to the development of Africa's financial system and promote sustainable economic development.

Chapter 4 contains an empirical analysis of the effect of access to finance on firms' productivity. Cross-sectional firm-level data from World Bank Enterprise Survey is used estimate the effect of access to bank overdrafts, credit line and checking account on various measures of productivity such as labour productivity, total factor productivity (TFP) and stochastic frontier

Cobb-Douglas and translog model. To address potential endogeneity and OLS estimation bias, instrumental variable (GMM) model is used to estimate the TFP model using the type of ownership and the sex of the owner(s) as instruments. Chapter 5 presents the overall conclusion and policy recommendations.

# Chapter 2: FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH IN AFRICA: THE ROLE OF FINANCIAL DEVELOPMENT*

## 2.1 Introduction

According to recent reports, before the financial crisis (2002 - 2008) Africa's economy achieved average annual growth rates of 5.6%, this unsurprisingly fell to just about 2.2% in 2009 before recovering to 4.6% in 2010 (UNECA, 2013). By 2012, Africa recorded an average annual growth rate of 5% in spite of the economic uncertainties and global slowdown, and the recovery progressed to about 5.6% for 2014. Projections forecast a potential growth rate of 6% for 2015, thereby making Africa one of the fastest-growing regions in the world (UNECA, 2013, UNECA, 2015).

While Africa seems to be returning to relatively strong growth rates, the continent still faces some challenges. One of the major concerns is that Africa's impressive economic growth has not translated into a diversified economy which creates jobs, and fosters faster social development (UNECA, 2013). Africa still lags behind regarding socio-economic progress when compared to other developing continents. This is because Africa has not been able to produce sufficient domestic savings and investments in its economy, a problem that can be addressed by not just assessing the quantity but the quality of investments (UNECA, 2015). According to Dahou et al., (2009), Africa continuously requires a significant amount of capital investment for productivity enhancement, job creation, and the provision of basic amenities for individuals and households.

Foreign Direct Investment (FDI) is a primary source of capital investment and external finance in Africa. FDI is assumed to be a major factor in improving Africa's economy because of the benefits accrued from it. Also, it is the main form of foreign private capital inflows in Africa. The inflow of FDI to Africa ranks higher than other sources of external finance such as remittances, private debt and portfolio equity, and Official Development Assistance (ODA). According to UNCTAD (2013), FDI flow to Africa increased by 5% to $50 billion, making it one of the few regions that registered a year-on-year growth in 2012. In 2013, Africa experienced a further increase of 4% to $57 billion (UNCTAD, 2014).

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8th RGS doctoral conference in economics at Universität Duisburg-Essen, Germany in February 2015.

Endogenous growth theory suggests that the condition of the financial system is crucial in determining not only the quantity but quality of FDI that a country can attract (Alfaro et al., 2004). This chapter empirically investigates the role of financial development in improving the effect of FDI on Africa's economy to ensure a sustainable and fully inclusive growth. This chapter contributes to the literature by applying the bank-based or market-based financial system debate to the FDI-growth nexus in Africa. It introduces a new dimension to the analysis of financial development by investigating which financial system would be more appropriate in improving this effect. Hence, results presented in this chapter could contribute to enhancing existing knowledge in the field of financial development.

The broad objective of this chapter is to determine the role of financial development in enhancing the relationship between FDI and economic growth in African countries while identifying whether the dominance of the banking system is affecting how the benefits of FDI is accrued on economic growth in Africa. To achieve this, the following specific sub-objectives will be pursued: determine the overall effect of the development of the financial system (i.e. banks and stock markets) on the FDI-growth linkage using aggregate measures of financial development, analyse the effect of the choice of developing only banks and stock markets respectively on FDI-growth nexus in Africa using measures of the financial structure. Based on the findings, this chapter would proffer policy advice that could assist in enhancing the effect of FDI on African economies through the development of the appropriate financial system.

The financial system consists mainly of financial intermediaries (i.e. banks) and financial markets (i.e. stock markets) which function differently and have different effects on economic performance. The study by Allen et al. (2010) shows that Africa's financial system is mainly dominated by banks because they have the ability to function even in environments with poor institutions. However, it is argued that Africa needs both types of financial institutions (banks and stock markets), because preferring one over the other may leave Africa without the long-term finance it requires to stimulate economic growth (Rateiwa and Aziakpono, 2015). The dominance of the banking system in Africa has led to the existence of a financial gap[2] in Africa, because the predicted levels of financial development exceeds the actual level experienced (Mahonye and Ojah, 2014). Hence, the existence of this financial gap has led to new interest in the role of the stock markets in African economies.

[2] The empirical evidence of the financial gap is provided in Allen et al. (2010).

This chapter addresses this concern by investigating whether Africa's focus on developing a bank-based system is supporting or hampering the effect of FDI on economic growth, and if it should move towards developing a market-based system, or focus on developing well-functioning and efficient banks and stock-markets. In other words, this chapter explores whether the degree to which African countries financing sources mix is slanted (bank-based or market-based finance) matters for fully benefiting from FDI inflow.

The relevance of this study to the African context are: first, the largely undeveloped nature of Africa's economy subjects African leaders to intense pressure to improve and strengthen the drivers of economic growth so as to stimulate development within their countries. Second, expert knowledge of the relative importance of the banking sector and stock market in the financial system is a vital tool needed by the government to formulate optimum growth-enhancing economic policy. Therefore, the form of financial system that would promote sustainable economic growth must be determined to aid the formulation of sound economic policy for the country (Arestis et al., 2005). Lastly, using financial development measures that capture only one aspect of the financial system (i.e. banks) in an economy with fairly developed stock markets hinders the financial system from exerting its overall effect on the economy and could lead to incorrect conclusions on the effects of financial development and its role in the FDI-growth nexus. (Aziakpono, 2008: Beck and Levine, 2004).

The results obtained showed that developing the overall financial system of African countries is more beneficial than developing either the banks or financial markets. The results are inconsistent with the bank-based and market-based view of the financial system. Therefore, the dominance of the banking system in African economies could be limiting the effect of FDI on economic growth. A balanced financial system consisting of both banks and stock markets that provide efficient and effective services improves the effect of FDI on economic growth in African countries. Therefore, the overarching policy implication is that relevant authorities should invest in accumulating quantity and quality financial services in order to fully benefit from FDI inflow in Africa. As a result, policymakers should concentrate on formulating and implementing structural reform strategies that promote the development of stock markets that would work in harmonization with banks. Significantly, the liquidity of banks and stock markets should be developed.

The chapter is structured as follows. Section 2.2 provides an overview of Africa's financial systems and FDI Inflow. Section 2.3 reviews existing theoretical and empirical literature on FDI, financial development, and economic growth. Section 2.4 provides details of the

econometric methodology used and describes the data in the study. Section 2.5 reports and discusses the results, and the summary of findings, implications for policy action and conclusions are presented in Section 2.6.

## 2.2 Overview of Africa's Financial Systems and FDI Inflow

The continent of Africa is made up of 53 countries, with each country having different economic and cultural characteristics including different financial systems (Allen et al., 2010). Having been characterized as a region with challenging financial markets due to its political and economic problems, recent practice of market liberalization makes the continent increasingly attractive to foreign traders and investors. Given that the African continent is a diverse one, a review of its financial systems becomes a challenge (Allen et al., 2010). This section would review the general financial system of Africa and provides a detailed overview of the twelve[3] countries used in the empirical analysis. It also reviews the flow of FDI into Africa.

### 2.2.1 General Overview

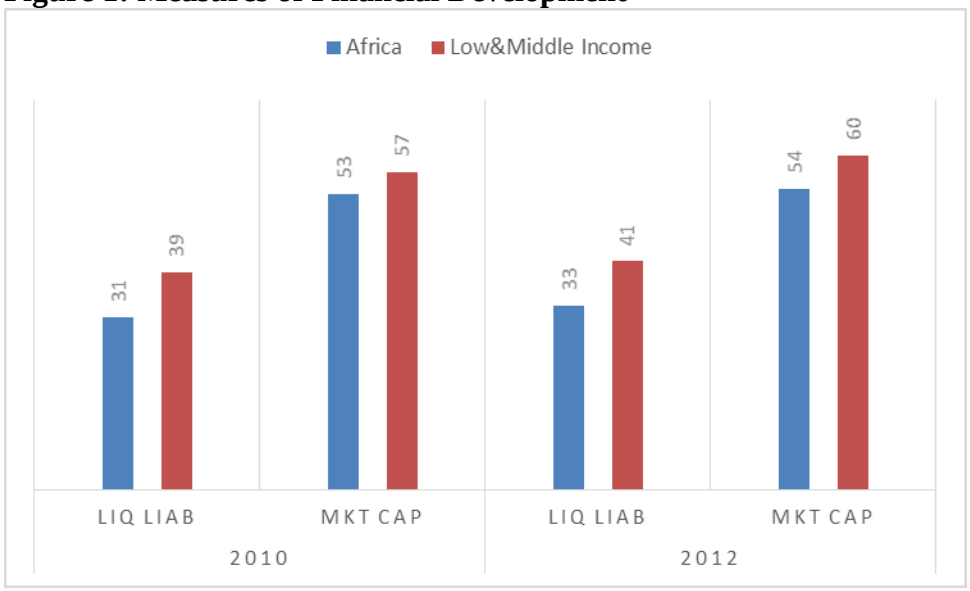
Africa has most of the least developed financial systems in the world (Dahou et al., 2009; Becks et al., 2009; Allen et al., 2010). The financial markets in most African countries are characterized by inadequate regulatory framework, underdeveloped capital markets, lack of innovative financial instruments, and banking sectors that fail to exercise its role of intermediation. The financial systems in Africa are small both in absolute and relative terms (Becks et al., 2009). Particularly, the financial systems of Sub-Saharan African (SSA) countries (excluding South Africa) are the least developed when compared to other developing regions, and are dominated by traditional banking and informal finance practices. Africa's financial systems lack the technological innovations needed to provide quality services (Allen et al., 2010). In 2011, the Global Financial Development Report recorded the number of ATM per 100,000 persons in SSA to be seven compared to approximately seventeen recorded for other developing countries.

However, in recent times, substantial changes have begun to take place in Africa's financial system. Countries that mostly depended on the traditional banking system, recently (after the outbreak of the global financial crisis) started embracing the role of capital markets in the economy (Andrianaivo and Yartey, 2012). These improvements in Africa's financial system are the results of extensive economic reforms that have taken place over the years. Also, the introduction of non-bank finance, particularly in the form of stock markets has increased across Africa leading to improved financial system operations (Africa Development Indicators Report

[3] The countries are: Botswana, Cote d'Ivoire, Egypt, Ghana, Kenya, Mauritius, Morocco, Nigeria, South Africa, Swaziland, Zambia and Zimbabwe.

2013). Although, Africa's financial systems have experienced improvements in both its capitalization (size) and trading activity its measures of financial development are still lower than other low and middle income countries as seen in the figure below. This implies that Africa still needs more improvement in its financial sector to be able to take advantage of the benefits derived from a balanced and developed financial system.

**Figure 1: Measures of Financial Development[4]**




Source: Author's calculation using data from World Bank, Global Financial Development

### 2.2.1.1 Banking Systems in Africa

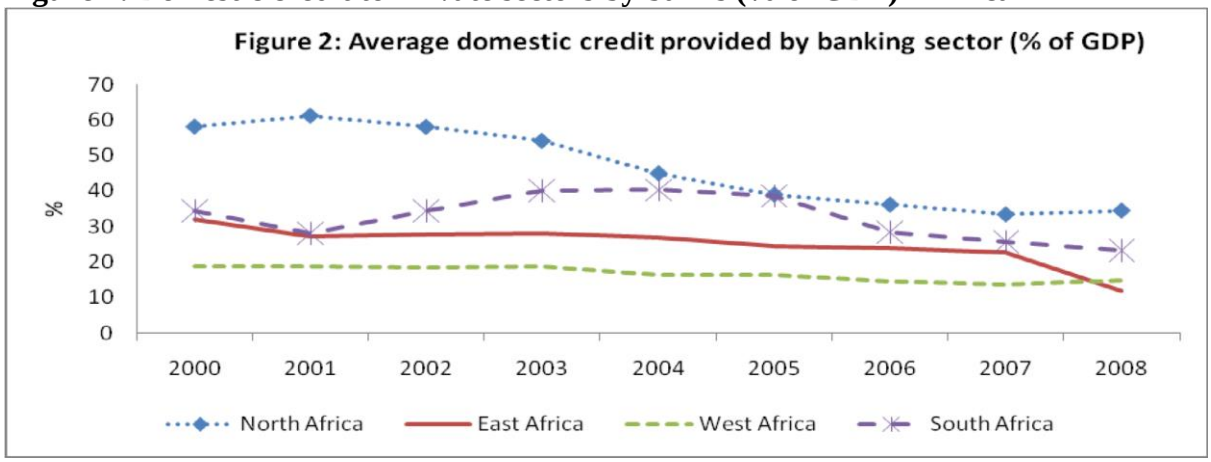
In the banking system, the main indicators of financial development are credit to the private sector and bank assets (IMF, 2005). Andrianaivo and Yartey (2012), highlights the difficulties involved in generalizing banking system development in Africa. This is because as stated above African countries differ, and do too regarding financial development and access to financial services (Andrianaivo and Yartey, 2012). However, some common features can be identified such as an increase in credit provided to the private sector and the measure of bank asset relative to GDP. Despite, the recorded improvement of Africa's banking system, its financial depth indicators are still the lowest in the world (Andrianaivo and Yartey, 2012). While developed economies record an average of more than 100 percent for the credit to private sector, Africa records a little over 15% (Global Financial Development Indicators).

[4] LIQ LIAB represents **Liquid liabilities** (M3) as % of GDP.
MKT CAP represents **Market capitalization** of listed domestic companies (% of GDP).
This is calculated by adding the combined average values of Sub-Saharan African countries and the five Arab states. The low and middle income excludes all African countries.

Another common feature of the banking system in Africa is that a more significant number of banks invest in government securities, mainly treasury bills (Allen et al., 2010). This reflects a highly dysfunctional financial intermediary and could be worrisome because banks are more inclined to safer government securities and reject the provision of private credit (Allen et al., 2010). For this reason, banks in Africa record low levels of private credit provisions and development. Various African policy makers have recognised the dysfunctionality in the banking system and measures are being implemented to correct this defect. A functional banking system would provide an enabling environment that serves all economic agents and ensures the efficient allocation of resources by building information capital (Allen et al., 2010).

However, Nigeria and some Southern African countries like Malawi, Botswana, South Africa and the Seychelles already have banking systems that are well capitalized, dynamic and pursuing innovative banking practices (Allen et al., 2010). Particularly, the banking system of Seychelles is as highly sophisticated like those in most developed countries (Allen et al., 2010).

**Figure 2: Domestic credit to Private sectors by banks (% of GDP) - Africa**




Source: Allen et al., 2010

### 2.2.1.2 Stock Markets in Africa

In the last two decades there has been a significant increase in the number of stock markets in Africa. Presently 29 stock markets are in operation in Africa compared to twenty years ago when SSA and North Africa had only 5 and 3 stock markets respectively (Allen et al., 2010). The two oldest stock markets in Africa are in South Africa and Egypt and have been in existence since the 1880s, newer stock markets have experienced a market capitalization boom (Allen et al., 2010). In SSA, a regional stock exchange located in Abidjan was established. It serves the Francophone countries of West Africa. For Southern and Eastern Africa plans are in place to establish a similar regional market so as to consolidate their thinly capitalized markets

(Allen et al., 2010). Table 1 below shows that African markets turnover is improving when comparing 2007 and 2008 turnover ratios. These improvements are the result of development in regulatory and economic environments that have occurred in recent years. Also, the participation of foreign firms is increasing and African markets seem to be emerging towards a more developed system.

**Table 1: Turnover as a % of GDP**

| COUNTRY | 2007 | 2008 | % Δ 2007-2008 |
|---|---|---|---|
| **Botswana** | 0.9 | 0.6 | -33% |
| **Egypt** | 41.4 | 57.57 | 39% |
| **Ghana** | 0.7 | 2.26 | 223% |
| **Kenya** | 4.5 | 3.62 | -20% |
| **Mauritius** | 5.12 | 5.42 | 6% |
| **Morocco** | 41.9 | 29.65 | -29% |
| **Namibia** | 3.7 | 18.74 | 406% |
| **Nigeria** | 28.2 | 7.79 | -72% |
| **South Africa** | 52.5 | 63.1 | 20% |
| **Tanzania** | 0.1 | 0.15 | 50% |
| **Uganda** | 0.1 | 0.45 | 350% |
| **Zambia** | 0.6 | 1.55 | 158% |
| **Africa Mean** | 14.98 | 15.91 | 6% |
| **Africa Median** | 4.5 | 5.42 | 20% |
| **WFE Mean** | 96.6 | 101.5 | 5% |
| **EMERGING MARKETS** | | | |
| Buenos Aires SE | 8.9 | 7 | -21% |
| Bursa Malaysia | 57.1 | 36 | -37% |
| Bombay SE | 29.4 | 29 | -1% |
| Taiwan SE | 153.3 | 145.5 | -5% |
| Istanbul SE | 129.7 | 135.1 | 4% |
| Amman SE | 42.3 | 59.1 | 40% |
| Singapore SE | 77.6 | 63.7 | -18% |
| South Korea | 196.3 | 192.6 | -2% |

Source: A comparative analysis of the performance of African Stock markets; Capital Market Authority

Notwithstanding the progress made, when compared to stock markets in other emerging markets, Africa's stock markets are relatively small and are dominated by few large firms representing a high proportion of total market capitalization (Andrianaivo and Yartey, 2012). As seen in Table 2, with the exception of South Africa, Egypt, and Nigeria, all others have very few companies listed on the stock markets. More than 50 percent of the listed companies are located in South Africa and Egypt. Regarding market capitalization, the region is dominated by the Johannesburg stock exchange in South Africa. However, in recent times, rapid growth has been recorded in the Cairo and Alexandria Stock Exchange (CASE). Smaller stock exchanges lack the experience and resources required to issue new shares, preventing active

trading activities from institutional investors and minority government stockholders (Andrianaivo and Yartey, 2012).

**Table 2: Number of Listed Companies**

| | 2006 | 2007 | 2008 | 2009 | %Δ 2008-2009 |
|---|---|---|---|---|---|
| Botswana | 18 | 30 | 31 | 31 | 0.00% |
| Cote d'Ivoire | **40** | 40 | 40 | 40 | 0.00% |
| Egypt | 595 | 435 | 373 | 313 | -16.09% |
| Ghana | 32 | 32 | 35 | 35 | 0.00% |
| Kenya | 52 | 54 | 56 | 55 | -1.79% |
| Mauritius | 41 | 41 | 40 | 40 | 0.00% |
| Malawi | 11 | 13 | 15 | 15 | 0.00% |
| Morocco | 63 | 73 | 73 | 73 | 0.00% |
| Namibia | 28 | 27 | 29 | 29 | 0.00% |
| Nigeria | 202 | 212 | 213 | 216 | 1.41% |
| South Africa | 401 | 422 | 425 | 396 | -6.82% |
| Swaziland | 6 | 6 | 5 | 5 | 0.00% |
| Tanzania | 10 | 10 | 14 | 15 | 7.14% |
| Tunisia | 48 | 48 | 50 | 52 | 4.00% |
| Uganda | 11 | 12 | 13 | 13 | 0.00% |
| Zambia | 16 | 17 | 19 | 21 | 10.53% |
| Zimbabwe | 83 | 85 | 90 | 96 | 6.67% |
| Sudan | 51 | 53 | 53 | 53 | 0.00% |
| Mozambique | 5 | 7 | 6 | 6 | 0.00% |
| Libya | 4 | 6 | 6 | 6 | 0.00% |
| **AFRICA TOTAL** | **1,717** | **1,623** | **1,586** | **1,510** | **-4.79%** |
| **AFRICA MEAN** | **85.85** | **81.15** | **79.30** | **75.50** | |
| **AFRICA MEDIAN** | **36** | **36** | **37.5** | **37.5** | |
| **AFRICA % OF WFE** | **3.80%** | **3.49%** | **3.46%** | **3.33%** | |
| **WFE TOTAL** | **45,211** | **46,509** | **45,846** | **45,358** | **-1.06%** |
| **EMERGING MARKETS** | | | | | |
| Malaysia | 1020 | 1027 | 976 | 959 | -1.74% |
| Mexico | 151 | 131 | 373 | 406 | 8.85% |
| Thailand | 518 | 523 | 525 | 535 | 1.90% |
| Chile | 246 | 244 | 238 | 236 | -0.84% |
| Bombay SE | 4796 | 4887 | 4921 | 4,955 | 0.69% |
| Argentina | 106 | 111 | 112 | 106 | -5.36% |

Source: A comparative analysis of the performance of African Stock markets; Capital Market Authority

Also, stock markets in Africa are illiquid and trading occurs mainly in the few stock markets that have the majority of market capitalization (Yartey and Adjasi, 2007). There is a large gap between the orders made for the purchase of shares and what is actually sold, because shares are rarely traded in most stock markets (Andrianaivo and Yartey, 2012). For example, in Swaziland the turnover ratio is 0.04 percent compared to Mexico with a turnover ratio of 31 percent. The effect of low liquidity leads to stock exchanges generating low business volume, making it difficult for them to support local markets with market analysis and its own trading systems (Andrianaivo and Yartey, 2012)

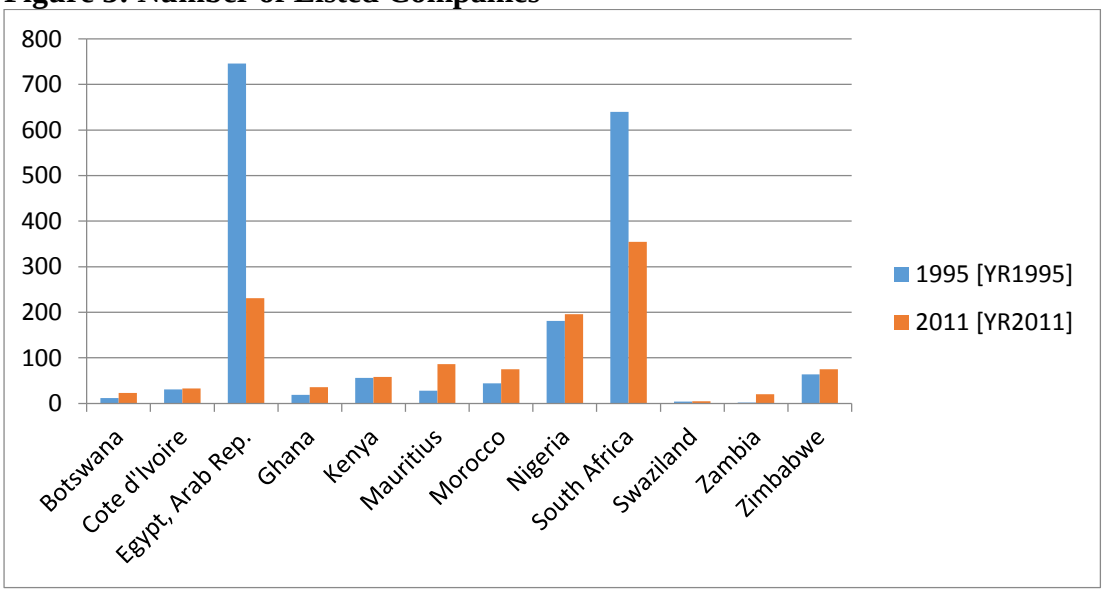
In summary, while it is recognized that African stock markets are improving, stock markets in Africa are still small and illiquid exposing them to various risk such as economic and political

instabilities, fluctuation in the value of currencies. These risk, if not hedged against can prevent further growth in Africa's market (Allen et al., 2010).

### 2.2.2 Detailed Review of Selected Financial Systems

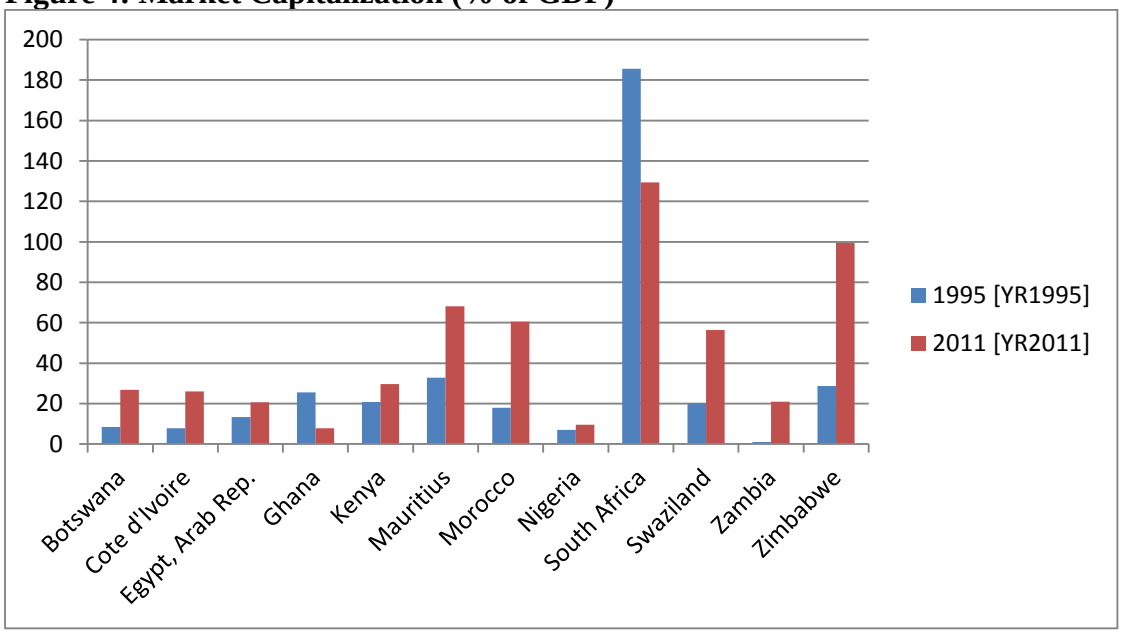
Due to data availability, twelve African countries are studied in this chapter. This section provides a review of the financial system of each country. The figures below show various indicators of financial development in years 1995 and 2011.[5]

**Figure 3: Number of Listed Companies**




Source: Author's calculation using data from World Bank, Global Financial Development

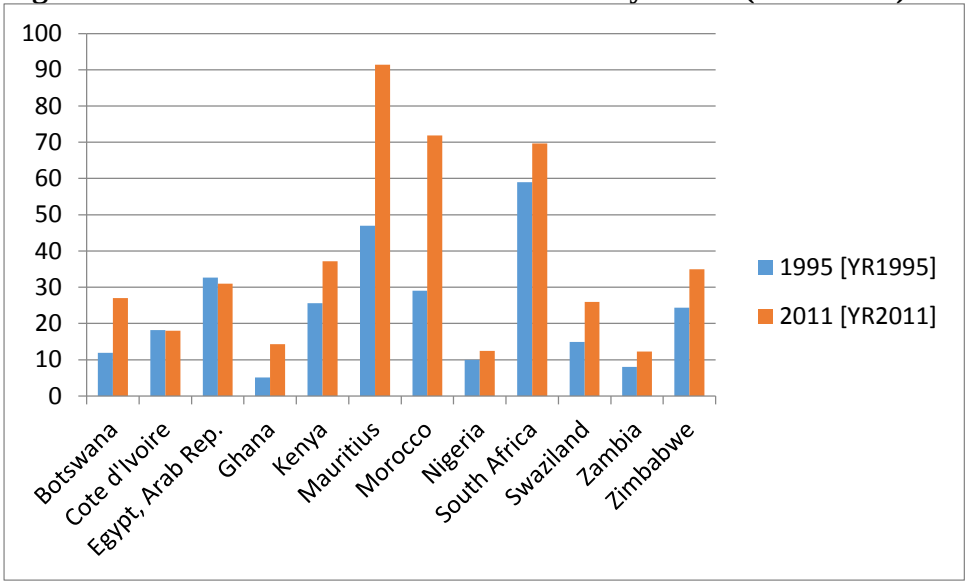
**Figure 4: Market Capitalization (% of GDP)**




Source: Author's calculation using data from World Bank, Global Financial Development

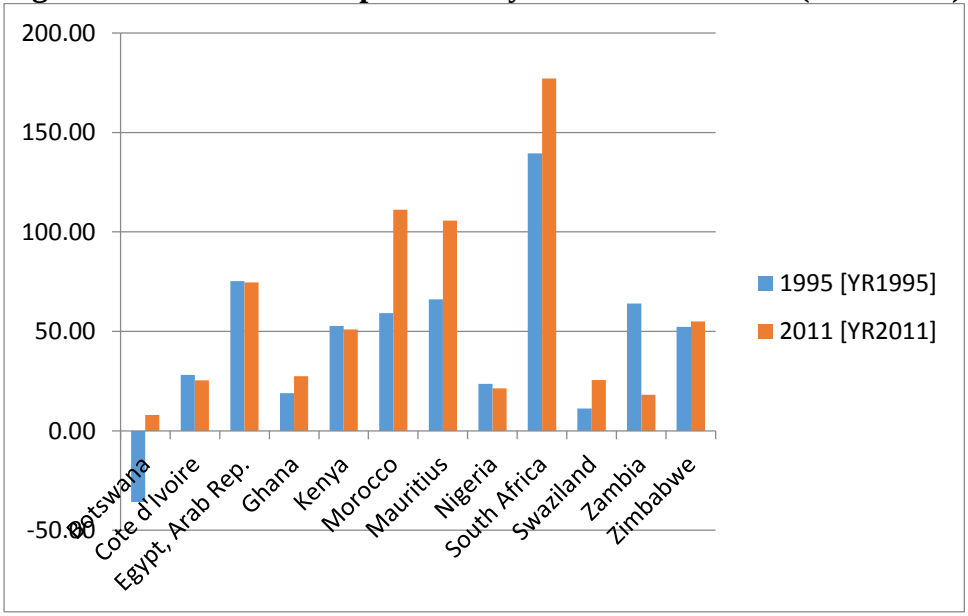
[5] Note: these years are chosen randomly for comparison.

**Figure 5: Domestic credit to Private sectors by banks (% of GDP) – Sample data**




Source: Author's calculation using data from World Bank, Global Financial Development

**Figure 6: Domestic credit provided by the financial sector (% of GDP)**




Source: Author's calculation using data from World Bank, Global Financial Development

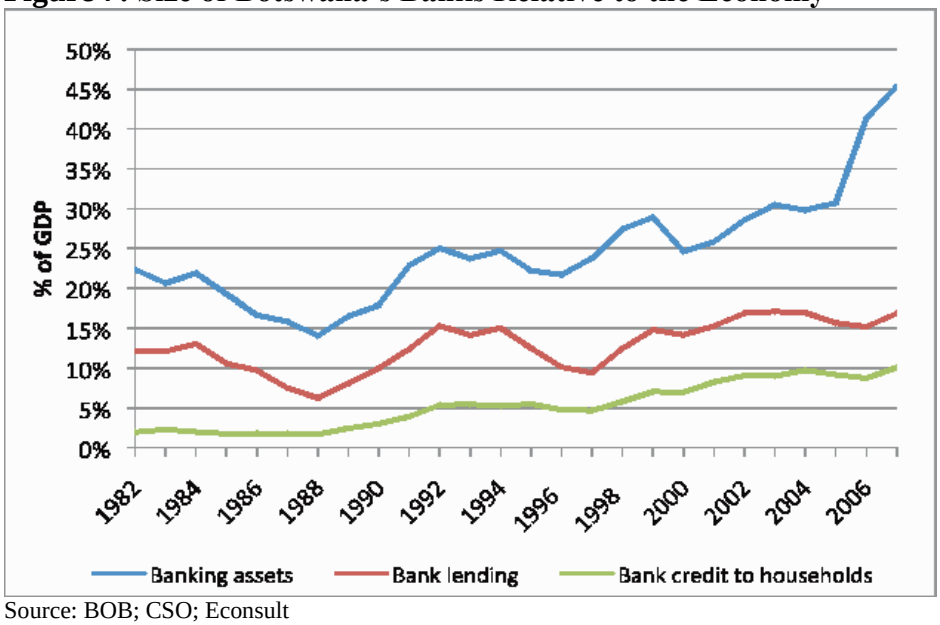
Figures 3 to 6 show that on average, these countries have experienced some form of financial development. For example, in Mauritius, domestic credit to private sectors increased from 43% to 91%. However, measures like market capitalization when compared to other developing countries, are still low for most countries in this study.

#### 2.2.2.1 Botswana

Botswana's banking sector has grown over the years and has become one of the most important sectors in the economy as it aids in the development of other sectors (Keith and Abo, 2010). In

the Botswana Stock market (BSE), the banking system dominates market capitalization and in recent years it has been the driving force for growth in the BSE. The Bank of Botswana (BOB) established in 1975, regulates and supervises the operations of the banking system. Figure 7 shows that for the period 1997 to 2007, an average growth rate of 21% for banking system asset was recorded, while the relative size of the economy - measured by nominal GDP recorded an average growth of 14%.

**Figure 7: Size of Botswana's Banks Relative to the Economy**




Source: BOB; CSO; Econsult

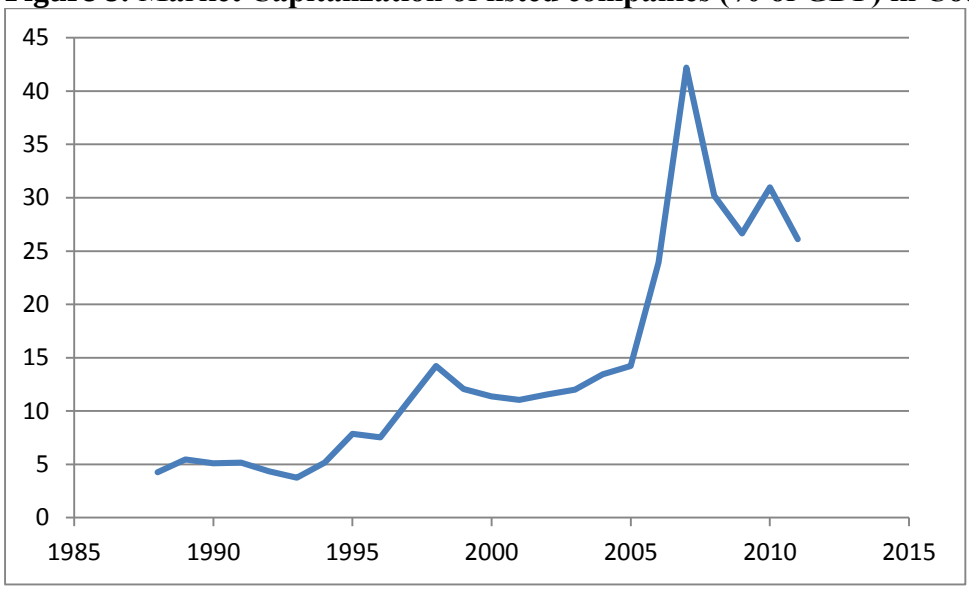
Botswana's stock market is at its embryonic stage. It was formally established in 1995 after operating informally as Botswana Share market for the period between 1989 and 1995. It remains relatively illiquid and small. In 2008, the market capitalization was estimated to be 35%, but reduced to 31% in 2012.

### 2.2.2.2 Cote d'Ivoire

Cote d'Ivoire's primary financial sector is the banking system, and it is in an oligopolistic situation with few commercial banks controlling over 75% of the banking transactions. The banks are regulated by the Central Bank of West African States (BCEAO). It is located in Dakar, Senegal and is the only bank authorised to issue currency for the West African Economic and Monetary Union (WAEMU) member states. About 46.6% stake holdings are held by foreign investors in banking system, 33.4% held by private nationals and 20% is held by the government (Allen et al., 2010).

Until 1998, the Abidjan Stock Exchange was the only stock exchange in the francophone West African Countries. The Bourse Régionale des Valeurs Mobilières (BRVM) located in Abidjan was then formed to serve the WAEMU members[6]. A branch is located in the capital city of each member states. In Côte d'Ivoire market capitalization of listed companies (% of GDP) was 26.12% as of 2011. Its highest value over the past 23 years was 42.2% in 2007 while its lowest value was 3.75% in 1993.

**Figure 8: Market Capitalization of listed companies (% of GDP) in Cote d'Ivoire**




Source: Index Mundi

### 2.2.2.3 Egypt

The banking system in Egypt is dominated by few large banks, which are mainly foreign banks. More than 60% of banking operations is accounted for by foreign banks. Forty banks are operating in Egypt and two-thirds of them are owned by foreigners either wholly or have majority stockholdings. Various reforms are taking place in the banking system and focuses on restructuring and selling off state-owned stockholdings to improve the quality of banks. Following the initiation of these reforms program, the banking system has recorded improvements as seen in Table 3.

[6] Eight countries are members of the WAEMU region.

**Table 3: Banking System Indicators in Egypt**

| End of June | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| **First : Domestic Credit** | **531314** | **570953** | **695326** | **775268** | **892766** | **1072566** |
| Net claims on the government (A+B-C) | 178323 | 174005 | 273122 | 326141 | 437337 | 578654 |
| A- Securities | 278011 | 271788 | 397804 | 440410 | 542792 | 677139 |
| B- Credit facilities | 52151 | 67732 | 55939 | 68139 | 98826 | 111362 |
| C- Government deposits | 151839 | 165515 | 180621 | 182408 | 204281 | 209847 |
| Claims on public business sector | 24446 | 26897 | 33146 | 29985 | 32981 | 40620 |
| Claims on private business sector | 268607 | 291719 | 304470 | 326350 | 323241 | 340865 |
| Claims on household sector | 59938 | 78332 | 84588 | 92792 | 99207 | 112427 |
| **Second : Other Items (Net)** | **-87255** | **-107969** | **-118249** | **-140217** | **-136855** | **-135782** |
| Capital accounts$^{+}$ | -114534 | -135401 | -148332 | -170877 | -146543 | -168778 |
| Net unclassified assets and liabilities | 27279 | 27432 | 30083 | 30660 | 9688 | 32996 |

Source: Central Bank of Egypt, Annual Report

The stock market in Egypt is one of the oldest in Africa and the world. It is called the Cairo and Alexandria stock exchange (CASE) and began operations in 1885 as the Alexandria futures market. In the over-the-counter market (OTC) de-listed and low securities are traded. There has been in a decline of about 16% in the number of companies listed on the stock exchange from 596 in 2006 to 313 in 2009 (Table 2). Despite the decrease, the turnover ratio still increased from 41.4% in 2007 to 51.6% in 2008 as seen in Table 1. At the moment, the Egyptian stock market is in the process of transitioning to a fully automated trading system (Allen et al., 2010).

### 2.2.2.4 Ghana

The banking system in Ghana is made up of three separate areas, namely: the Central Bank, Commercial/Universal Banks, and Rural/Community Banks (Allen et al., 2010). As at 2013, there were 29 commercial banks in Ghana and foreign banks accounted for more than 75% of bank ownerships. Recent competition from Nigerians banks has reduced the market share of

the previously top three banks[7]. A stated capital of not less than GHc60 million is required from banks operating in Ghana by the new regulation of Bank of Ghana. Ghana currently has 129 rural banks serving the rural communities and are regulated by the ARB Apex Bank.

**Table 4: Structure of Ghana's financial system**

| | Dec-00 | | Dec-05 | | Dec-09 | | Dec-10 | |
|---|---|---|---|---|---|---|---|---|
| | Number | Percent of Total Assets | Number | Percent of Total Assets | Number | Percent of Total Assets | Number | Percent of Total Assets |
| Commercial Banks | 16 | 76.9 | 20 | 70.5 | 26 | 75.1 | 26 | 75.1 |
| Private | 10 | 39.2 | 15 | 42.5 | 21 | 52.4 | 21 | 53.4 |
| Domestic | 5 | 4 | 6 | 8 | 8 | 12.7 | 8 | 15.1 |
| Foreign | 5 | 35.2 | 9 | 34.6 | 13 | 39.8 | 13 | 38.3 |
| State-Owned 1/ | 6 | 37.7 | 5 | 28 | 5 | 22.6 | 5 | 21.7 |
| Rural and Community Banks | 113 | 2 | 121 | 4.3 | 134 | 3.3 | 135 | 2.7 |
| Other Banking and Quasi Banking Institutions | 33 | 3.9 | 34 | 4.7 | 46 | 5 | 47 | 4.6 |
| Savings and Loan companies | 8 | 0.2 | 12 | 1 | 18 | 1.6 | 19 | 1.8 |
| Mortgage Finance Companies | 1 | 1.4 | 0 | 0 | 1 | 0.3 | 1 | 0.3 |
| Leasing and Finance Houses | 21 | 1.2 | 20 | 2.3 | 27 | 3 | 27 | 2.5 |
| Discount Houses | 3 | 1.1 | 2 | 1.4 | 0 | 0 | 0 | 0 |
| Nonbank Financial Institutions | 57 | 17.2 | 80 | 20.6 | 113 | 16.6 | 134 | 17.5 |
| Insurance companies | 22 | ... | 26 | 2.8 | 42 | 3.9 | 42 | 3.6 |
| Life insurance | 2 | ... | 5 | ... | 17 | 1.3 | 17 | 1.3 |
| Non-life insurance | 18 | ... | 19 | ... | 23 | 2.5 | 23 | 2.3 |
| Reinsurance | 2 | 0 | 2 | ... | 2 | 0 | 2 | 0 |
| Pension funds | ... | 12.5 | ... | 17.8 | ... | 12.7 | ... | 12.4 |
| SSNIT 2 | ... | 12.5 | ... | | ... | 12.7 | ... | 11.8 |
| Other Public | ... | ... | ... | ... | ... | 0 | ... | ... |
| Private | ... | ... | ... | ... | ... | 0 | ... | ... |
| Securities Industry | 35 | ... | 54 | ... | 71 | 0 | 92 | 1.5 |
| Broker-dealers | 14 | ... | 18 | ... | 22 | ... | 21 | 0.3 |
| Investment advisors | 17 | ... | 28 | ... | 39 | ... | 52 | 1.2 |
| Custodians | - | ... | 3 | ... | 4 | ... | 12 | ... |
| Trustees | - | ... | 2 | ... | 2 | ... | 3 | ... |
| Total Financial System | 254 | 100 | 291 | 100 | 364 | 100 | 387 | 100 |

Source: IMF Country Report; Ghana: Financial System Stability Assessment Update

In 1990, the Ghana stock exchange (GSE) started operation and as of the end of 2013, the number of listed companies was 34, with a market capitalization of GHc 61,158 million. The GSE is highly concentration, 95% of the total market capitalization is held by the top 10 firms while 81% of market capitalization is held by the top 3 firms listed on the stock exchange (Allen et al., 2010).

### 2.2.2.5 Kenya

The financial system in Kenya is relatively well developed when compared to others in the region (Beck and Fuchs, 2004). As at 2012, Kenya had 43 commercial banks, and the size of assets was Ksh. 2.2 trillion (equivalent to $2.2 billion). The banks are regulated by the Central Bank of Kenya established shortly after independence. Several structural adjustment programs have taken place leading to the privatization of government-owned banks. Reports by the

[7] Barclays Bank, Standard Chartered Bank and Ghana Commercial Bank

central bank showed that the financial sector is developing faster than the overall economy. It grew by 9.0% in 2010 and 7.8% in 2011, while the economy grew by 5.8% and 4.4% in 2010 and 2011 respectively (Central Bank of Kenya, quarterly report 2012). 21,713,580,528.92

**Table 5: Kenya's Banking System Compared to Others (%)**

| | Private Credit/GDP | Financial Deposits/GDP | Bank Concentration[8] |
|---|---|---|---|
| Kenya | 25.6 | 33.2 | 39.3 |
| Sub-Saharan Africa | 18.7 | 23.5 | 77.0 |
| Low-income countries | 16.0 | 19.5 | 74.2 |
| OECD countries | 92.6 | 113.5 | 47.9 |

Source: Beck and Fuchs (2004)

Kenya's stock market - The Nairobi stock exchange was formed in 1954 and is the oldest and most active stock exchange in the central African region. Regarding volume, it is the 4$^{th}$ largest in Africa and the 5$^{th}$ largest in terms of market capitalization (Allen et al., 2010). It is also the only market in the region that has an index.

### 2.2.2.6 Mauritius

At independence, Mauritius inherited a bank-dominated financial system and was quite developed with 11 banks. The banking system in Mauritius is highly concentrated with two long-established domestic and two international banking groups dominating the banking sector. Presently, there are 19 commercial banks and 14 nonbank deposit-taking institutions in Mauritius (IMF, 2008). The Bank of Mauritius regulates the operations of the banks and recently the quality of banking supervision has improved significantly with higher standards than in most African countries.

As is common for small countries, the stock markets are quite shallow. However, in recent years, it has experienced some level of growth. The Stock Exchange of Mauritius (SEM) is marginally profitable. According to IMF report (2008), the SEM replaced the OTC market with the Development Enterprise Market, this would enhance transparency and disclosure for smaller firms.

### 2.2.2.7 Morocco

In Morocco, the banking system plays a major role. From 2005, credit to the private sector has increased by 18 percent per year and at the end of 2007, it was equal to 66 percent of GDP (compared to 12 percent in Algeria, 61 percent in Tunisia, and 75 percent in Lebanon) (IMF country report, 2008). It recorded an increase in the size of asset (% of GDP) from 81 percent

[8] Bank concentration is the share of assets of the largest three banks in the total banking sector.

in 2003 to 109 percent in 2007. The number of privately owned banks is six, foreigners have major stakes in five banks, and five are publicly owned (IMF country report, 2008). Foreign-owned banks held 14 percent of financial sector assets and 21 percent of banking system assets at the end of 2006. The government continues to control directly or indirectly about 23 percent of the banking sector, down from 40 percent in 2002. The banking system is concentrated and controlled by six of the largest banks that hold up to 85% of the assets (Table 6).

**Table 6: Structure of Morocco's financial system, 2005-2007**

| | Dec-2005 | | | | | Dec-2006 | | | | | Dec-2007 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Total assets (Millions Dhs) | % total assets | % GDP | | Number | Total assets (Millions Dhs) | % total assets | % GDP | | Number | Total assets (Millions Dhs) | % total assets | % GDP | |
| **I. Banks** | **23** | **22** | **463,469** | **54** | **89** | **22** | **550,202** | **53** | **96** | | **22** | **667,830** | **55** | 109 | |
| Private | 11 | 11 | 391,907 | 46 | 76 | 11 | 464,498 | 45 | 80 | | 11 | 558,795 | 46 | 91 | |
| Domestic | 6 | 6 | 293,915 | 34 | 56 | 6 | 347,966 | 34 | 60 | | 6 | 416,511 | 34 | 68 | |
| Foreign | 5 | 5 | 97,992 | 11 | 19 | 5 | 116,532 | 11 | 20 | | 5 | 142,284 | 12 | 23 | |
| Public | 6 | 5 | 63,850 | 7 | 12 | 5 | 73,733 | 7 | 13 | | 5 | 95,870 | 8 | 16 | |
| Commercial | 4 | 3 | 53,774 | 6 | 10 | 2 | 64,137 | 6 | 11 | | 2 | 83,546 | 7 | 14 | |
| Specialized | 2 | 2 | 10,076 | 1 | 2 | 3 | 9,596 | 1 | 2 | | 3 | 12,324 | 1 | 2 | |
| Off-shore | 6 | 6 | 7,712 | 1 | 1 | 6 | 11,971 | 1 | 2 | | 6 | 13,165 | 1 | 2 | |
| **II. Non-Bank Financial Institutions** | **254** | **254** | **395,115** | **46** | **76** | **270** | **474,960** | **46** | **83** | | **311** | **537,340** | **44** | **87** | |
| Insurance Companies | 18 | 18 | 84,945 | 10 | 16 | 18 | 91,518 | 9 | 16 | | 18 | 109,501 | 9 | 18 | |
| Pension funds | 4 | 4 | 101,836 | 12 | 19 | 4 | 112,209 | 11 | 20 | | 4 | 129,045 | 11 | 21 | |
| Leasing | 8 | 7 | 16,962 | 2 | 3 | 7 | 21,227 | 2 | 4 | | 7 | 26,497 | 2 | 4 | |
| Factoring | 2 | 2 | 980 | 0 | 0 | 2 | 1,125 | 0 | 0 | | 2 | 1,494 | 0 | 0 | |
| Consumer finance companies | 22 | 19 | 23,293 | 3 | 4 | 19 | 26,620 | 3 | 5 | | 20 | 33,473 | 3 | 5 | |
| Brokerage companies | 13 | 13 | 6,062 | 1 | 1 | 14 | 15,554 | 2 | 3 | | 16 | 21,689 | 2 | 4 | |
| Mutual funds | 181 | 185 | 86,470 | 10 | 17 | 200 | 129,090 | 13 | 22 | | 238 | 132,138 | 11 | 21 | |
| Mortgage lending institutions | 2 | 2 | 727 | 0 | 0 | 2 | 758 | 0 | 0 | | 2 | 853 | 0 | 0 | |
| Caisse d'épargne (Savings)* | 1 | 1 | 10,721 | 1 | 2 | 1 | 11,699 | 1 | 2 | | 1 | 13,163 | 1 | 2 | |
| Chèques postaux* | 1 | 1 | 11,891 | 1 | 2 | 1 | 10,113 | 1 | 2 | | 1 | 9,934 | 1 | 2 | |
| Caisse de Dépôt et de Gestion | 1 | 1 | 50,798 | 6 | 10 | 1 | 54,717 | 5 | 10 | | 1 | 59,224 | 5 | 10 | |
| Caisse Centrale de Garantie | 1 | 1 | 430 | 0 | 0 | 1 | 330 | 0 | 0 | | 1 | 329 | 0 | 0 | |
| **III. Microfinance Institutions** | **12** | **12** | **1,704** | **0** | **0** | **13** | **3,986** | **0** | **1** | | **13** | **6,464** | **1** | **1** | |
| **IV. Total Financial System Assets (I+II+II** | **289** | **288** | **860,288** | **100** | **165** | **305** | **1,029,148** | **100** | **179** | | **346** | **1,211,634** | **100** | **197** | |

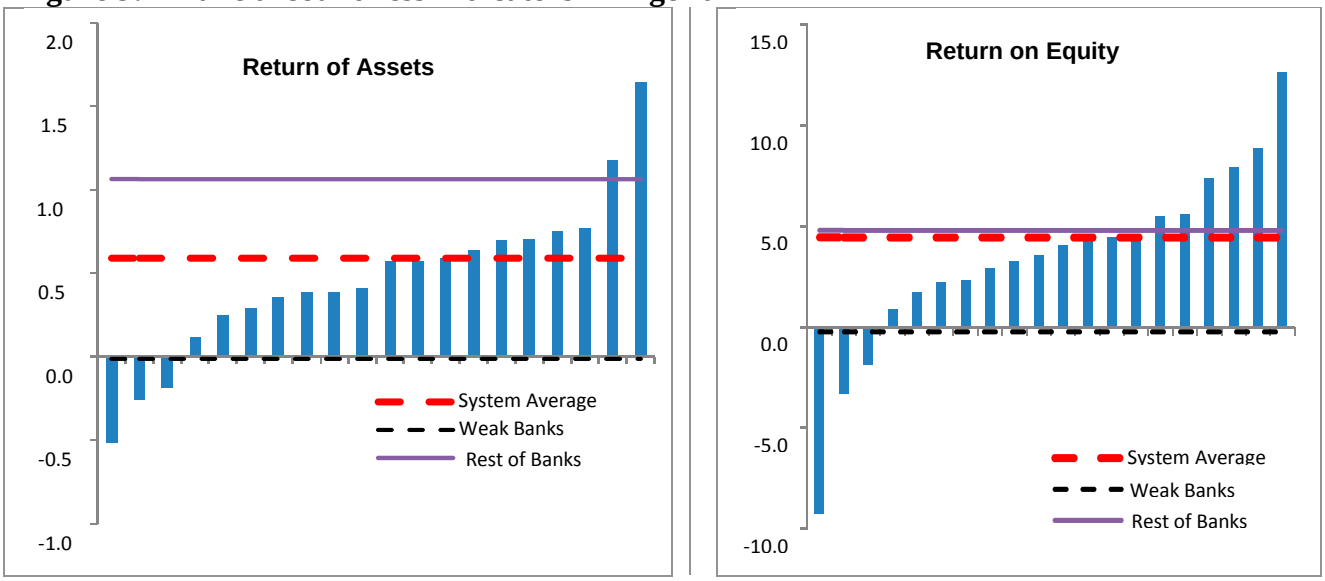
Source: IMF, 2008: Morocco: Financial System Stability Assessment—Update

Morocco's stock market - the Casablanca Stock Exchange (CSE) is relatively developed and has 77 companies listed on it. In 2008, the total traded volume in the CSE was MAD 217.7 billion (approx. US$25.6 billion). However, the rate of foreign investment in the CSE is low even though there are no restrictions on foreign ownership of Moroccan companies (Allen et al., 2010). On the CSE trading volume as a fraction of capitalization is 40.9%, while trading volume as a fraction of GDP it is 158.4% (Allen et al., 2010).

#### 2.2.2.8 Nigeria

The Central Bank of Nigeria (CBN) started operations in 1959 and controls the operations of the monetary and financial sector in Nigeria. Nigeria's financial system faces the problem of weak governance, and this includes non-transparent ownership structures, deficiencies in financial reporting, and widespread perceptions of corruption. According to IMF report (2013), the failures and extreme undercapitalization of some banks emphasized these weaknesses leading to the consolidation of the banking sector from 89 banks in 2005 to 20 in 2012. However, Nigeria's financial system is experiencing fast growth and has become more integrated with both regional and global financial systems. 61 percent of GDP was attributed to the gross financial system asset in 2011. Presently, 20 banks are operating in Nigeria. However, the banking system is dominated by 6 of them who accounted for about 60 percent of total banking sector assets, and only 4 percent of total banking asset is held by European banks (IMF country report, 2013). In general, the Nigerian banking system seems to be well capitalized, liquid, and profitable.

**Figure 9: Financial soundness Indicators in Nigeria**




Source: IMF, 2013 Nigeria: Financial Sector Stability Assessment

In 1960, the Lagos Stock Exchange was established and is currently the most liquid stock exchange in the West African region (Allen et al., 2010). It was later renamed the Nigeria Stock Exchange (NSE) in 1977 and has eight branches across the country. However, it remained relatively small and recorded a decrease in market capitalization (% of GDP) from 30% in 2008 to 12% in 2012. (IMF country report, 2013). Nigeria stock exchange is highly concentrated with the 10 largest companies accounting for over 75% of the market share.

### 2.2.2.9 South Africa

The financial system in South Africa is more sophisticated than other African countries. It comprises of well-established capital and stock markets, insurance companies, and pension funds (IMF country report, 2008). South Africa's financial system has been able to overcome the challenges posed by the global financial crises without any major effect on its operations.

**Table 7: Financial Soundness Indicator in South Africa. 2002-2007**

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|
| | (Percent, unless otherwise indicated) | | | | | |
| Capital adequacy: | | | | | | |
| Regulatory capital to risk-weighted assets [1] | 12.6 | 12.4 | 14.0 | 12.7 | 12.3 | 12.8 |
| Regulatory tier 1 capital to risk-weighted assets [1] | 8.7 | 8.9 | 10.5 | 9.7 | 9.0 | 9.5 |
| Asset quality: | | | | | | |
| Nonperforming loans to total gross loans [2] | 2.9 | 2.4 | 1.8 | 1.5 | 1.1 | 1.4 |
| Nonperforming loans net of provisions to capital [2] | 13.2 | 8.5 | 6.2 | 6.4 | 5.6 | 8.2 |
| Share of mortgage advances in domestic private credit [3] | 40.7 | 39.6 | 43.3 | 46.2 | 47.7 | 48.9 |
| Earnings and profitability: | | | | | | |
| Return on assets (average) | 0.4 | 0.8 | 1.3 | 1.2 | 1.4 | 1.4 |
| Return on equity (average) | 5.4 | 11.6 | 16.2 | 15.2 | 18.3 | 18.1 |
| Interest margin to gross income | 52.3 | 38.3 | 41.6 | 38.2 | 43.8 | 58.5 |
| Noninterest expenses to gross income | 60.4 | 74.8 | 68.5 | 61.5 | 48.5 | 48.9 |
| Liquidity: | | | | | | |
| Liquid assets to total assets | 4.7 | 4.7 | 4.7 | 4.8 | 4.6 | 4.6 |
| Share of short-term deposits in total deposits | 47.9 | 45.7 | 43.7 | 43.5 | 42.8 | 42.5 |
| Exposure to FX risk: | | | | | | |
| Maximum effective net open FX position to capital | 3.6 | 1.3 | 0.8 | 1.9 | 1.4 | 0.7 |
| Share of foreign currency loans in total lending | 13.6 | 11.9 | 10.9 | 11.1 | 11.4 | 9.3 |
| Share of foreign currency deposits in total deposits [4] | 4.4 | 2.7 | 2.7 | 2.7 | 3.3 | 3.0 |
| Share of foreign liabilities in total liabilities [5] | 6.3 | 3.8 | 4.0 | 4.2 | 5.3 | 6.0 |

Source: IMF country report, 2008. South Africa: Financial System Stability Assessment

[1] Total (banking and trading book).

[2] The official definition of nonperforming loans comprises doubtful and loss loans. Doubtful are loans overdue for 180 days unless well secured, or with a timely realization of the collateral.

[3] Domestic private credit not seasonally adjusted.

[4] Foreign funding to total funding.

[5] Foreign funding to total liabilities (including capital).

The commercial banks are the largest and most important component of the financial system in South Africa, with their assets equivalent to 120 percent of GDP. However, the banking system is highly concentrated with only four[9] banks accounting for almost 85 percent of total assets and have substantial international presence (IMF country report, 2008). Also, the presence of foreign banks has increased significantly in South Africa. In 2005, Barclays took over as the major shareholder in ABSA and the Industrial and Commercial Bank of China's (ICBCs) acquired 20 percent stake in Standard Bank at the end of 2007 (IMF country report, 2008).

The Johannesburg Stock Exchange (JSE) is the premier and most sophisticated stock exchange in Africa comparable to stock markets in developed countries (Allen et al., 2010). The JSE market capitalization is the largest among emerging markets and is reflected in the inclusion of South Africa in major investable global stock market indexes (IMF country report, 2008). Trading transaction in JSE is carried out using an upgraded technology system- the London Stock Exchange's TradElect$^{TM}$ (Allen et al., 2010). In 2007, the average number of daily trade recorded was 46,216, and a total number of 99,959 has been registered on the futures closing date (Allen et al., 2010).

#### 2.2.2.10 Swaziland

The financial system in Swaziland is small and not very well diversified and developed. There are currently four authorized commercial banks in the country and are regulated by the Central Bank of Swaziland. However, banks have been affected adversely from lending to a narrow corporate client base and have become shallower. Since 1995, there has been a reduction in the private sector lending, money supply, and bank deposits as a percentage of GDP (Allen et al., 2010). The nonbank financial institutions (NBFIs) were developed to fill the financial needs not met by the banks. Nonetheless, they are not regulated and supervised adequately. The NBIFs focuses on rural/non-steady income citizens that do not have access to banking services. There were 266 NBIFs at the end of 2007 in Swaziland. In 1991, the Swaziland Stock Exchange (SSX) was established and remains relatively inactive. There are only five companies listed on the stock exchange in Swaziland.

[9] The Amalgamated Bank of South Africa (ABSA), FirstRand Bank, Nedbank, and Standard Bank.

#### 2.2.2.11 Zambia

After the liberalisation of the economy, new financial institutions entered into the country. However, despite these new entries, the Zambian financial system has remained relatively small and is dominated by banks. Over the last five years, the ratio of M2 to GDP has been in the range of 15 –20 percent. In Sub- Saharan African countries this is within the middle range of monetisation ratios (Bank of Zambia report, 2011). The banking sector is dominated by commercial banks and accounts for about 90% of financial system asset. Another significant component of the banking system is foreign equity participation, accounting for three-quarters of the banking system capitalisation.

The Zambia Stock Market is a small and "unified market". The number of companies listed on the Lusaka Stock Exchange (LuSE) has increased from 7 to 11, with only a few making more than 10 percent of their shares available for trading. Recently, trading volumes have significantly increased because of the listing of companies such as Zambia National Commercial Bank, Celtel, and the Copper Belt Energy on the stock exchange (Allen et al., 2010). There are 21 companies currently listed on the LuSE. However, over 77% of the total market capitalisation is accounted for by the top five listed companies (Allen et al., 2010).

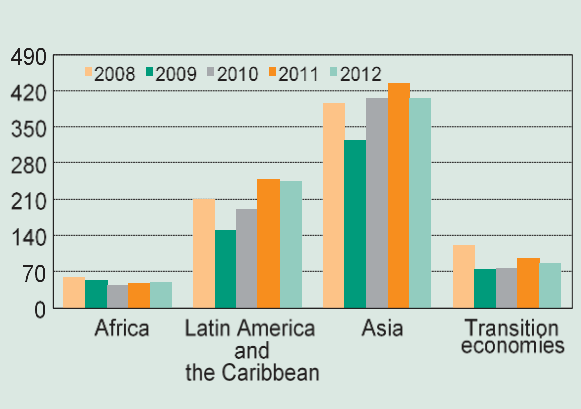
#### 2.3.2.12 Zimbabwe

The banking system in Zimbabwe is regulated and supervised by the Central Bank of Zimbabwe (RBZ). The perceived threats of indigestion and economic empowerment have affected the soundness and viability of the banking system. It was ranked 137 out of 148 by the World Economic Forum Global Competitive Index 2013 – 2014 in terms of soundness of banks. There are currently sixteen commercial banks, two merchant banks, four building societies and one saving bank in Zimbabwe. The Zimbabwe Stock Exchange established in 1896 is a small but active stock market in Africa. It has over 90 companies listed on the stock exchange, and they do not allow more than 40% of their ownership to be foreign (Allen et al., 2010). However, the high inflation and political instability is affecting the stock exchange. Currently, trading operations are conducted only in US dollars.

### 2.2.3 The Inflow of Foreign Direct Investment in Africa

Although, the flow of FDI to Africa increased by 5 percent to US$50 billion in 2012, Africa still remains one of the lowest recipient of FDI (see Table 8) (UNCTAD report, 2013).

**Figure 10: FDI inflows by region, 2008-2012 (Billions of dollars)**




Source: UNCTAD, World Investment report, 2013

Nonetheless, this increase is a sign of progress as Africa is one of the few regions that recorded a year-on-year growth and the only region that had an increase in FDI flow in 2012[10], even though global FDI decreased by 18 percent (UNCTAD report, 2013). The outflow of FDI from Africa also increased in 2012 to US$14 billion. This was as a result of increased flow in some sectors in South Africa such as mining and wholesale sector. Increasing outflows in health-care products from South Africa also contributed.

According to UNCTAD report (2013), the most important driver of FDI to Africa is the investment in extractive industries in countries such as Democratic Republic of Congo, Mauritania, Mozambique, and Uganda. Also, manufacturing and service projects aimed at growing Africa's consumer market received increased investment from foreign investors. In Africa, China, Malaysia, India, and South-Africa are the largest developing-country investors in terms of FDI stock (UNCTAD report, 2013). In Africa, the BRICS countries (Brazil, China, India the Russian Federation, and South Africa) are becoming important and are currently ranked as top investors, investing mainly in the manufacturing and service sector. Although Africa received only 4 percent of BRICS FDI outflows, there has been an increase from 14% to 25% of FDI inflow from BRICS countries in Africa (UNCTAD report, 2013).

In 2011, South Africa was the fifth largest recipient of FDI flows in Africa with investments worth $18 billion. They moved to the third position in terms of FDI inflow in 2012 and are the

[10] See Figure 10

second largest developing country global investor after Malaysia (UNCTAD report, 2013). Nigeria receives the largest share of FDI flows into Africa[11] and is the fourth alongside Mozambique and Zimbabwe in terms of outward flows. Mauritius has the largest share of outward stock in Africa. Reinvested earnings in the private non-banking sector account for majority of the outward stock (UNCTAD report, 2013).

**Table 8: FDI flows by region, 2010-2012**

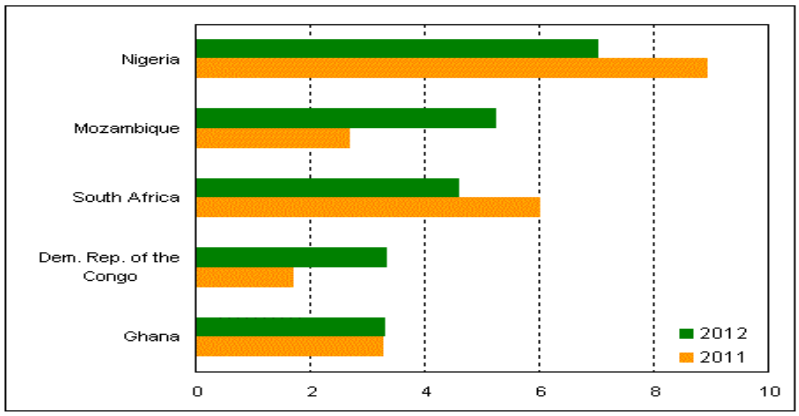
Table 8 FDI flows by region, 2010–2012
(Billions of dollars and per cent)

| Region | FDI inflows | | | FDI outflows | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2010 | 2011 | 2012 |
| World | 1 409 | 1 652 | 1 351 | 1 505 | 1 678 | 1 391 |
| Developed economies | 696 | 820 | 561 | 1 030 | 1 183 | 909 |
| Developing economies | 637 | 735 | 703 | 413 | 422 | 426 |
| Africa | 44 | 48 | 50 | 9 | 5 | 14 |
| Asia | 401 | 436 | 407 | 284 | 311 | 308 |
| East and South-East Asia | 313 | 343 | 326 | 254 | 271 | 275 |
| South Asia | 29 | 44 | 34 | 16 | 13 | 9 |
| West Asia | 59 | 49 | 47 | 13 | 26 | 24 |
| Latin America and the Caribbean | 190 | 249 | 244 | 119 | 105 | 103 |
| Oceania | 3 | 2 | 2 | 1 | 1 | 1 |
| Transition economies | 75 | 96 | 87 | 62 | 73 | 55 |
| Structurally weak, vulnerable and small economies | 45 | 56 | 60 | 12 | 10 | 10 |
| Least developed countries | 19 | 21 | 26 | 3.0 | 3.0 | 5.0 |
| Landlocked developing countries | 27 | 34 | 35 | 9.3 | 5.5 | 3.1 |
| Small island developing States | 4.7 | 5.6 | 6.2 | 0.3 | 1.8 | 1.8 |
| *Memorandum: percentage share in world FDI flows* | | | | | | |
| Developed economies | 49.4 | 49.7 | 41.5 | 68.4 | 70.5 | 65.4 |
| Developing economies | 45.2 | 44.5 | 52.0 | 27.5 | 25.2 | 30.6 |
| Africa | 3.1 | 2.9 | 3.7 | 0.6 | 0.3 | 1.0 |
| Asia | 28.4 | 26.4 | 30.1 | 18.9 | 18.5 | 22.2 |
| East and South-East Asia | 22.2 | 20.8 | 24.1 | 16.9 | 16.2 | 19.8 |
| South Asia | 2.0 | 2.7 | 2.5 | 1.1 | 0.8 | 0.7 |
| West Asia | 4.2 | 3.0 | 3.5 | 0.9 | 1.6 | 1.7 |
| Latin America and the Caribbean | 13.5 | 15.1 | 18.1 | 7.9 | 6.3 | 7.4 |
| Oceania | 0.2 | 0.1 | 0.2 | 0.0 | 0.1 | 0.0 |
| Transition economies | 5.3 | 5.8 | 6.5 | 4.1 | 4.3 | 4.0 |
| Structurally weak, vulnerable and small economies | 3.2 | 3.4 | 4.4 | 0.8 | 0.6 | 0.7 |
| Least developed countries | 1.3 | 1.3 | 1.9 | 0.2 | 0.2 | 0.4 |
| Landlocked developing countries | 1.9 | 2.1 | 2.6 | 0.6 | 0.3 | 0.2 |
| Small island developing States | 0.3 | 0.3 | 0.5 | 0.0 | 0.1 | 0.1 |

Source: UNCTAD, World Investment report, 2013

[11] See Figure 11

**Figure 11: Top 5 recipients of FDI in Africa 2011-2012 (Billions of Dollars)**




Source: UNCTAD, World Investment Report 2013

**Table 9: Inward FDI rates of return, 2006-2011**

**Table 9. Inward FDI rates of return, 2006–2011**
(Per cent)

| Region | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|
| **World** | **7.3** | **7.2** | **7.7** | **5.9** | **6.8** | **7.2** |
| **Developed economies** | **6.3** | **6.1** | **4.6** | **4.0** | **4.6** | **4.8** |
| **Developing economies** | **9.7** | **9.8** | **9.7** | **8.7** | **9.0** | **8.4** |
| Africa | 10.0 | 13.4 | 15.8 | 10.8 | 8.9 | 9.3 |
| Asia | 9.5 | 9.1 | 8.9 | 8.8 | 9.8 | 8.8 |
| East and South-East Asia | 9.7 | 9.3 | 9.1 | 9.2 | 10.5 | 9.2 |
| South Asia | 14.2 | 12.9 | 10.6 | 8.6 | 8.5 | 8.8 |
| West Asia | 3.9 | 3.8 | 6.7 | 5.4 | 4.9 | 5.1 |
| Latin America and the Caribbean | 10.2 | 10.3 | 9.9 | 7.6 | 7.1 | 7.1 |
| **Transition economies** | **14.5** | **12.0** | **16.5** | **10.7** | **10.8** | **13.0** |

Source: UNCTAD, World Investment Report 2013

Table 9 above shows that Africa recorded a higher rate of return on FDI inflow than the global rate and that of developed countries. This is because Africa is endowed with natural resources and extractive agricultural products that attract higher rates of return (UNCTAD 2012). In sum, the review of financial systems of sample countries shows that the financial system is an essential component of their economy. While some countries have relatively developed financial systems (banks and stock markets), others are still small and not well diversified. Also, the review of FDI inflow shows that Africa is experiencing an increase in flows. However, are the benefits associated with FDI inflow being fully accrued? Therefore, it is important to examine if the nature of the financial system is limiting African countries from fully benefiting and attracting more FDI inflows.

## 2.3 Literature Review

This study relates to three strands of literature, and this section reviews the literature on the effect of FDI on economic growth, the role played by the financial system in enhancing the relationship between FDI and economic growth, and the financial structure claim[12] (i.e. Banks-based vs. Market-based debate).

### 2.3.1 FDI and Economic Growth

This sub-section reviews the theoretical argument of the relationship between FDI and economic growth and provides a review of some empirical studies that investigate this relationship.

#### 2.3.1.1 Theoretical Evidence on the FDI-Growth Nexus

There have been extensive academic debates on the relationship that exists between FDI and economic growth in developing continents such as Africa (Hermes and Lensink, 2003). According to Alfaro et al., (2004), the benefits derived from FDI to the host country span from serving as a source of capital to creating employment opportunities. FDI also contributes to facilitating access to foreign markets for the host country and local firms by generating technological and efficiency spillovers (Alfaro et al., 2004). In addition to stimulating the macro economy by the actual investment,[13] the other potential effect of FDI is that it raises total factor productivity, which in turn affects economic growth. It also leads to the most efficient use of resources in the host countries (OECD, 2002). FDI affects economic growth via its impact on foreign trade flows, technology transfers and spillover effects on host country's economy, and the direct effect on the economic structure of the host country (OECD 2002). All these benefits are expected to contribute to higher economic development and employment growth which are effective tools for achieving higher economic growth in Africa, a developing continent.

The endogenous and neo-classical growth model provide the theoretical basis for the relationship between FDI and economic growth. The endogenous growth model postulates that FDI affects growth through technology transfer, capital formation, and spillover of knowledge (De Mello 1997; Borensztein et al., 1998). The effect of FDI on economic growth can occur through direct and indirect channels. FDI is assumed to have a direct impact on the host

[12] The financial structure here captures the decision to focus on either developing the banking system, stock markets, or the overall financial system.
[13] Actual investment refers to investments in new assets.

economy when it leads to an increase in total investment (Acar et al., 2012; Kurtishi-Kastrati, 2013). Other associated impacts include the incorporation of new inputs and technologies into the host country's production process. The direct impact of FDI on an economy is also through the accumulation of capital and technological know-how (Colen et al., 2009). From FDI inflows, multinational companies (MNCs) bring new capital to the host country's economy thereby enhancing the quantity of inputs in the country's production process.

FDI is also a source of direct financing for the acquisition of new (or old) plants and equipment, and an important catalyst of economic restructuring (Bruno and Cipollina, 2014). Also, investments in foreign affiliates can be a direct contribution of FDI to capital formation (Kurtishi-Kastrati, 2013). Lastly, FDI can directly impact a country's rate of economic growth through job creation (Gohou and Soumare, 2009). To ensure that the benefits derived from this channel are efficient, the ratio of jobs lost as a result of using FDI in a country (layoff due to mergers and acquisitions, the closing of local firms, etc.) should be lower than the amount of jobs created from the usage of FDI. For example, economic growth would be impacted more from investment in sectors that are labour intensive such as agriculture (Gohou and Soumare, 2009).

The indirect channel is found at the macroeconomic level and includes horizontal and vertical spillovers (Hanousek et al., 2011). The indirect impact produces positive externalities that enhance productivity and ultimately economic growth. Vertical spillovers are externalities to the private sector in the inter-industrial level (backward and forward linkages). This spillover occurs when foreign investors employ the services of local suppliers (backward linkages) to provide local sources and firms (forward linkages) that can provide and utilise the resources needed/used in the production process. This relationship would provide positive vertical spillover effect to the local firms (Alfaro et al., 2009). Horizontal spillovers are intra-industry level spillovers to local firms. The entry of a company whose productivity is driven by FDI encourages other companies within the same sector to catch up in terms of performance and competitiveness (Hanousek et al., 2011). An increase in efficiency can happen by copying new technologies or by hiring trained workers and managers from foreign-owned companies (Javorcik, 2004).

In the neo-classical growth models, FDI affects economic growth by increasing the efficiency and volume of investment (Melnyk et al., 2014). Nonetheless, the effect of FDI on economic growth is only felt in the short run (the level of income), but not in the long-run. The reason

for this is that in the long-run FDI can only affect growth via exogenous factors of technological progress and population growth. Therefore, FDI would only affect economic growth in the long-run through a positive and permanent effect on technology (Makki, and Somwaru, 2004). This permanent technological progress from FDI explains the diminishing returns on capital that leads to long-run economic growth. This shows that the effect of FDI on economic growth is influenced by the type and policy regime of FDI received (Gohou and Soumare, 2012). FDI channeled directly to improving the accessibility of specific markets would be more beneficial compared to FDI that imports raw materials, labor, and other services from firms outside the host country. The former leads to job creation, technological transfers, and knowledge spillovers (Gohou and Soumare, 2012).

#### 2.3.1.2 Empirical Evidence

This sub-section provides a review of some empirical studies that have investigated the relationship between FDI and economic growth. Various researchers have tried to investigate the direct and/or indirect channels through which FDI can affect economic growth in the host countries.

A survey by De Mello (1997) indicates that FDI can have an impact on economic growth through two main channels. They include capital spillover effects and knowledge transfers. This claim is also supported by a survey conducted by OECD (2002). They find a positive contribution of FDI to income growth and factor productivity in 11 out of 14 studies conducted. However, both studies stressed that for FDI to have an impact on growth the economic and technological conditions of the host countries are of crucial importance. Particularly for developing countries, some degree of development in infrastructure and/or education is needed to enjoy the potential benefits associated with FDI.

Borensztein et al (1998) in the study of 69 developing countries for the period 1970-1985 find that spillovers of technology and knowledge from FDI contributed to the long-term growth of the host countries. The extent of growth was determined by how FDI and domestic investments were substitutes and complements. In terms of country's infrastructure, the magnitude of FDI effect was determined by the availability of human capital. De Mello (1999) studied the effect of FDI on economic growth in a sample of 15 OECD and 17 non-OECD countries over the period 1979-1990. In the OECD samples, he finds a positive effect of FDI on economic growth in both developed and developing countries. In non-OECD countries, he finds no effect on

economic growth by FDI indicating that the benefits from FDI were restricted to higher income countries.

Similar findings are recorded by Li and Liu (2005) which show that FDI affects growth both directly and indirectly through its interaction with human capital. They also find a negative effect of FDI on economic growth in host countries when it is regressed with the technology gap between the source countries. Almfraji and Almsafir (2014) in a review of literature for the period 1994 to 2012 find that a large portion of studies concluded that, FDI had a significant positive effect on economic growth, with few studies showing a negative or null effect. Also, they observed that several factors influenced the effect of FDI on economic growth. While an adequate level of human capital, a well-developed financial system, and an open trade regime contributed to the positive effect of FDI on economic growth; technical gap and dependence on foreign investment had a negative impact on the FDI-growth relation.

The review of existing literature shows the existence of a strong relationship between FDI and economic growth. However, for the benefits associated with FDI to accrue to host countries, some conditions have to be fulfilled. There are several factors that determine the rate at which host countries would benefit from the inflow of FDI. The benefits associated with FDI inflow do no accrue automatically and evenly across countries.

### 2.3.2 The Role of Financial System Development in the FDI-Growth Nexus

#### 2.3.2.1 Theoretical Evidence

Although, FDI provides various benefits to a country, there are excessive[14] expectation about what can be achieved by FDI (Alfaro et al., 2004). To experience improved growth in an economy through the inflow of FDI, foreign investors need to operate in the "right" environment. The various benefits derived from FDI do not accrue automatically and evenly across countries, sectors and local communities as the circumstances in the host country are critical determining factors (Alfaro et al., 2003). The local conditions in the host country can enhance or limit its ability to fully benefit from the inflow of FDI (Alfaro et al., 2004). Therefore, through which channels would FDI improve the level of growth in Africa's economy (Lemi and Asefa, 2013)? According to Carp Lenuta (2013), financial systems, host country absorptive capacity, human capital, and technology are the main channels through which the effects of FDI are transmitted on the host country's economy. The endogenous

[14] This implies unrealistic expectations of what FDI can achieve without providing the 'right environment' for investors.

growth model also postulates that for FDI to have a positive impact on economic growth some country specific conditions have to meet (Mallick and Moore, 2008). They include sufficient availability of human capital, open trade regimes, complementarity between domestic and foreign investment and a well-developed financial system.

Following the important role of institutions recognised in the growth literature, this chapter focuses on the development of financial systems and examines whether the underdeveloped nature of Africa's financial system and the focus on bank-based financial system are some of the reasons for its inability to fully benefit from the inflow of FDI to the continent. One of the possible roles of the financial system is to enhance efficient allocation of resources in an economy. The financial system influences how financial resources are allocated efficiently over investment projects (Hermes and Lensink, 2003). Therefore, the financial system can improve the effect of FDI on economic growth through the mobilization of savings. This would increase the amount of resources that are available to finance new technologies adopted from foreign investments (Hermes and Lensink, 2003). Also, the financial system screens and monitors the investment projects undertaken ensuring that host countries only try to adopt practices from foreign investments that would increase the efficiency and well-being of the country. Therefore, by mobilizing savings, screening and monitoring investments undertaken by host countries the financial system would improve the effect of FDI on economic growth (Hermes and Lensink, 2003). Therefore, a developed financial system would improve a country's capacity to absorb the inflow of FDI. Notably, a more developed and balanced system contributes to the technology diffusion process associated with FDI.

Alfaro et al., (2003), argue that financial systems improve the effectiveness of FDI on economic growth by, first, providing external finance to meet the technological knowledge gaps between current practices and new technologies generated through FDI inflow. The inflow of FDI and spillover effects are unlikely to be restricted to costless improvements. Most likely, a technological-knowledge gap is created between the current practices of local firms and the new technologies acquired. The greater the technological-knowledge gap between current practices and new technologies, the less adequate internally generated funds are and a greater need for external finance. Therefore, to take advantage of the new knowledge and technology and close the technological-knowledge gap associated with FDI inflow, local firms or government institutions would need to alter their daily operational activities, acquire new machines, undertake structural reorganization, and hire new skilled labour. These changes

generate improvement costs that cannot be financed internally by the operation of firms or government institutions and would require the need for external funds which is restricted to domestic sources (banks and financial markets) in most cases (Alfaro et al., 2003).. Second, potential investors are more comfortable in investing in an economy with a well-functioning financial system and are constrained by the lack of well-functioning financial systems. A balanced financial system would facilitate the movement of funds between host and investing countries, and this applies more when the arrival of an entirely different technology provides an opportunity for expansion into both domestic and foreign markets (Alfaro et al., 2003).

In addition, the financial system reduces the risk associated with adopting new technologies and upgrading existing ones (Hermes and Lensink, 2003). Most domestic entrepreneurs find this to be more risky than other investment projects. A more developed financial system reduces this risk by providing affordable capital thereby encouraging entrepreneurs to upgrade/adopt new technologies introduced by foreign firms (Hermes and Lensink, 2003). This would enhance economic growth by accelerating the speed of technological innovation (Hermes and Lensink, 2003). Also, when a domestic entrepreneur has decided to upgrade existing or adopt new technologies, and employee skills, capital is needed to finance these investments. The ability of domestic firms to implement their investment plans depends on how developed the financial system is because external finance from banks or stock markets is usually required (Hermes and Lensink, 2003). Alfaro et al., (2004) states that the lack of well-developed financial systems limit host countries from benefiting from potential positive FDI externalities because entrepreneurial development is restricted by limited access to credit markets.

Also, a well-developed domestic financial system is required by foreign investors. Foreign firms would need a well-functioning system for efficient transfer of funds needed to execute their investment projects in the host country. Also, as a result of exchange rate variation, foreign firms may decide to borrow from the domestic financial system to carry out their innovative activities in the host country (Hermes and Lensink, 2003). Therefore, the ability of foreign firms to easily access funds from the domestic financial system would increase their willingness to invest in that country. Thus, FDI and a developed financial system are complements in improving the effect of FDI on economic growth (i.e. increasing the rate of economic growth).

#### 2.3.2.2 Empirical Evidence

As seen in the previous section various researchers have used different data and applied various econometric techniques to investigate the relationship between FDI and economic growth. Despite this evident importance of the financial system in the FDI-growth nexus, it seems to be ignored in the FDI literature (Alfaro et al., 2004). Most existing literature either focus on the effect of financial development on economic growth or on FDI directly. In recent times, very few empirical studies have tried to examine the role played by the financial systems in the FDI-growth Nexus. Some of the pioneer studies to have investigated this effect include Hermes and Lensink, (2003) and Alfaro et al., (2003). These studies show that for FDI to be channeled to more productive sectors in an economy, the level of financial development in the host country is crucial.

Hermes and Lensink (2003) in the study of 67 countries mostly from Latin America and Asia argues that an important precondition for FDI to have a positive impact on economic growth is the development of the financial system. They developed a model of technological change to illustrate the importance of a developed financial system as a precondition for FDI to have a positive effect on economic growth. The results obtained show that a more developed financial system contributes to the technological diffusion associated with FDI inflow. From the dataset of 67 countries, 37 had FDI contributing positively to economic growth because they had sufficiently developed the financial system. However, one shortcoming of this study is that it uses just one single measure of financial development. It captures financial development using a banking system development indicator (the ratio of the log of the private sector bank loans to GDP).

Alfaro et al., (2003) using a sample of 71 randomly selected countries based on data availability investigate the role of financial system in enhancing the relationship between FDI and economic growth. They create a model of an economy with agents that can either work for a foreign company or become entrepreneurs. Their results show that a well-developed financial system allows agents to take advantage of knowledge spillovers as a result of the inflow of FDI. One critical pitfall of this study is the assumptions made in generating the model. These assumptions may not hold in every economy and result in inconsistency. Also, only a few financial system development measures are used in this study. However, the study proves the importance of the financial system in the FDI-growth nexus.

Alfaro et al., (2004) investigating OECD and non-OECD countries validate this claim in an endogenous growth framework, using both banking and stock market variables. They extend the study conducted in 2003 by using different measures of financial development, the inclusion of additional determinants of economic growth and addressing the issue of endogeneity. They find that FDI alone plays an ambiguous role in contributing to economic growth. On the other hand, countries with well-developed financial systems tend to gain significantly from FDI with robust results for different measures of financial development.

Alfaro et al., (2006) in capturing the role of financial development in the relationship between FDI and economic growth develop a theoretical model illustrating how financial development promotes the growth enhancing attributes of FDI in host economies via backward linkages. The economy in the model is a small and open economy where the production of final goods is carried out by foreign and domestic firms who compete for labor supply and intermediate products. The results obtained show that countries with well-developed financial systems experience growth effects from FDI that were almost twice of countries with poorly developed financial system. Specific benefits of a well-developed financial system from the study includes (i) reducing entrepreneur's constraints to credit thereby allowing them to start their own firms, (ii) positive spillover effects increases, and (iii) promoting the creation of backward linkages by FDI.

Al Nasser and Garza (2009) studied the effects of financial market development on FDI inflows for the period 1978 to 2003 using pooled data from 15 Latin American countries. They did this by studying how FDI is linked to the degree of financial system development in both the banking system and stock market. Using the Fixed Generalized Least Squares Method (FGLS), the results obtained show that FDI is a complement rather a substitute for financial development. FDI was positively correlated with measures of stock market and banking sector indicating that financial development is a strong predictor of FDI flows. Also, the control variables used such as inflation, openness, and technology gap and infrastructure level had a positive impact on FDI. The results obtained confirm that a country with a more developed financial system and stronger institutions receive more FDI flow and benefits.

Azman-Saini et al. (2010), using pooled data from 91 countries for the period 1975-2005 examined whether the positive impact of FDI on economic growth is only seen when financial development exceeds a threshold level. They used a threshold regression model to examine whether financial development is a precondition for FDI to positively impact on economic

growth. The results show that there is a minimum threshold level of financial development required for the positive effect of FDI on growth. The benefits of FDI are non-existent until this threshold level is attained. In conclusion, the authors believe that policy framework directed towards attracting FDI should go hand in hand with encouraging financial development.

In a recent study by Desbordes and Wei (2014), they argue that it is not only the destination country's[15] financial development (DFD) that can affect the impact of FDI but also the source country's financial development (SFD). A higher level of financial development in the destination country improves foreign investors' ability to access external capital[16] and promotes the integration of multinational enterprises. Furthermore, a developed financial system in the source country promotes the use of external capital by investors to finance FDI projects in host countries. Therefore, higher financial development in both destination and source countries improves the ability of investors to access external finance for undertaking capital-intensive projects in foreign markets. According to Desbordes and Wei (2014), this constitutes the major and direct role of financial development in the FDI-growth nexus. Indirectly, higher levels of financial development stimulate overall economic activity, particularly in sectors that are financially vulnerable.

The literature reviewed above propose a complementary relationship between financial development and FDI-growth nexus. However, studies such as Carkovic and Levine (2002); Carkovic et al. (2005) suggest that no such linkage exists between FDI and financial development. They find that financial development had no significant impact in promoting the growth enhancing effect of FDI. This could be the result of using only a single measure of financial development (the ratio of private credit by financial intermediaries to the private sector to GDP) in investigating the effect of financial development on the relationship between FDI and economic growth.

Otchere et al., (2010) in the study of African countries for the period 1996 to 2009 tested for the causality between FDI and financial development. In their study, they see the relationship between FDI and economic growth as substitutes rather than complements. Using the Granger Causality test to test for causality between FDI and financial development, results show the existence of bidirectional Granger causality between all financial development measures used

[15] The same as the host-country.
[16] FDI-specific access to external finance effect.

and FDI. They extended the study further by using a system of three simultaneous equations including FDI, financial development measures, and economic growth to investigate the role of financial system development in the FDI-growth Nexus. The results show that FDI has a positive impact on economic growth in Africa when the financial system is more developed. However, the type of financial development indicator used was not important in improving the effect of FDI on economic growth.

In sum, these studies have shown empirically that financial development has an effect on the relationship between FDI and economic growth. While some studies suggest this linkage as complimentary, others view it as substitute, and some indicate that no relationship exist at all. These studies show that that for countries to be able to benefit from technological innovation, capital accumulation and economic growth associated with the inflow of FDI, a well-functioning financial system is very crucial. Therefore, studies who do not investigate the role of financial development may be biased and lead to inaccurate results. However, most of the empirical literature that exist on the study of the importance of financial development in the FDI-growth linkage have either captured financial development in the banking sector, while others have captured financial development in the stock market. Most of the existing studies do not address the functional differences of the different components/structure of the financial system.

### 2.3.3 The Financial Structure Claim (Bank-based vs. Market-based debate).

#### 2.3.3.1 Theoretical Evidence

The major components of the financial system are financial intermediaries (i.e. banks) and stock markets. Economic theories provide conflicting opinion on the different roles of financial intermediaries and markets. Some arguments have been in favour of a financial system in which intermediaries provide most financial services, while others have focused on the superiority of financial markets. For an extended period, the advantages and disadvantages of banks and market have been debated by economists. This discussion is commonly referred to as the "bank-based versus market-based debate" (Allen and Oura, 2004). According to Levine (2002), there is no precise definition as to what makes up a bank-based financial system or a market-based financial system. However, a financial system dominated by the banking sector performing most of the economic transactions is termed a bank-based system, whereas a market-based system is dominated by the stock market predominantly stimulating economic growth (Beck and Levine, 2002). These debates are based on the functions and superiority of

the banks and stock markets and have mainly focused on Germany and Japan as an example of a bank-based system and the United States and Great Britain as a market-based system (Allen and Oura, 2004).

There are mainly three basis competing theories of the financial structure i.e. the degree to which a financial system is based on markets or banks. These are the bank-based theory, the market-based theory and the financial services and they highlight the difference in the functions of banks and financial markets.

#### 2.3.3.1.1 Theory of Bank- Based Financial System

Researchers who support the bank-based view base their theoretical arguments on the importance of financial intermediaries in the following processes. According to Chakraborty and Ray (2006) financial intermediaries are significant for: (i) reducing agency cost by acting as "delegated monitors", (ii) providing risk management through monitoring and the provision of liquidity, (iii) improving the flow of information; (iv) capital mobilization and allocation; (v) recognising high-quality projects, and (vi) monitoring corporate managers.

The general argument is that banks have the ability to finance developments in a more efficient way than markets in developing countries such as Africa (Ujunwa et al., 2012). Also, when considering state-owned banks, the issue of market failures can be easily overcome, and savings can be allocated in a very strategic way (Becks and Levine, 2002). Stulz (2000), provide some evidence on the effectiveness of banks in providing external finance. He argues that external finance is needed for new and innovative activities that require staged financing. Banks are the best provider for this because they can credibly commit to making additional funding available as the project develops (Becks and Levine, 2002).

The bank-based view highlights the shortcomings of a market-based financial system. For example, according to the argument by Stiglitz (1985), information is quickly and publicly revealed by well-developed financial systems. This reduces individual investor's incentive to acquire information. However, this problem is controlled by banks because they form long-run information relationships with firms and information is revealed immediately in public markets (Levine, 2002). According to Bhide (1993), the advocates for bank-based financial systems also lay emphasis on the creation of blinkered investor climate by liquid market, and they believe that greater stock market development hinders corporate control and economic growth (Levine, 2002).

#### 2.3.3.1.2 Theory of Market- Based Financial System

The role of stock markets is highlighted in the market-based theory. According to Levine (2002), Law (2004), researchers who support this view base their arguments on the role of financial markets in performing the following functions: (i) channelling savings towards firms to satisfy capital needs, (ii) easing takeovers which in turn enhance corporate governance, (iii) increasing the availability of information to all market participants, and (iv) risk management and diversification. In general, they lay emphasis on the difficulties associated with operating a bank-based structure while stressing on the comparative advantage of markets over banks in the effective allocation of capital (Levine, 2002).

Levine (2002) states that advocates of the market-based view emphasize that powerful bank frequently hinder innovation by extracting informational rent and shielding firms who they have close ties with from competition. Given that banks can access information that is not available to other lenders in the process of financing firms, powerful banks can use this inside information to extract informational rents from firms (Hellwig, 1991). Rajan (1992), argues that the market power banks have allowed them to obtain a significant share of the profits thereby reducing firms' incentives to undertake high risk and profitable projects. Also, powerful banks hinder competition and efficient cooperate governance as they may go against other creditors by colliding with managers (Levine, 2002).

Based on the shortcomings of banks, the market-based view believes that the financial market mitigates these problems. They argue that financial markets ensure that information is spread efficiently and completely too all investors. Therefore, market-based financial systems are better in enhancing economic development and growth because they reduce the inherent inefficiencies associated with banks (Levine, 2002).

#### 2.3.3.1.3 Financial Services View

The third theory, the financial services view was put together by Merton and Bodie (1995); Levine (1997). The financial service view places minimal or no importance on bank-based versus market-based debate (i.e. it establishes consistency with both the bank-based and the market-based views) (Levine, 2002). Although it embraces both, it highlights that distinguishing between bank-based and market-based financial systems matters less than was previously argued by bank-based and market-based theories. Specifically, the theory suggests "that it is neither banks nor markets that matter, it is both banks and markets" (Ujunwa et al, 2012, pg.230)

According to the financial services view it is the quality of the services provided by the financial institutions themselves that are of importance and not the form of their delivery (World Bank, 2001). Irrespective of who provides what service, the financial system be able to reduce information and transaction cost (Levine, 1997). Therefore, emphasis should be placed on creating banks and markets that function efficiently and provide quality service rather than on the type of financial structure in place (Ujunwa et al., 2012). The component of the financial system (banks and markets) should complement each other and not compete (Levine, 1997; Demirguc-Kunt and Levine, 2001). In sum, the financial services view says it is not the bank-based versus market-based debate which is of paramount importance, it is the creation of better functioning banks and markets (Levine, 2002).

In relation to the FDI- growth nexus, the theoretical debates provide evidence to show that banks and stock markets perform different functions. However, the current debate centres on the complementarity versus the substitutability between the two systems. The distinguishing contribution of bank-finance and market finance can be based on their involvement with investment projects[17] (Chakraborty and Ray, 2006). Banks are typically more 'hands-on', engaged in project selection, monitoring firms and identifying promising entrepreneurs. On the other hand, investment through the purchase of tradable securities, or market-finance, is more of an arm's length transaction, with very little subsequent involvement in a firm's investment decisions. Banks individually negotiate contract with borrowers and it is rare for a borrower to deal with more than a few banks whereas in the stock market there are a large number of anonymous lenders who take the contract form specified by the borrower or an intermediary as given (Allen, 1993). Therefore, the advantage banks have in monitoring investors and by extension identifying the most worthy projects and firms, fosters innovation and efficient resource allocation (Becks and Levine, 2002).

Another distinguishing function of banks and stock markets is in risk sharing. Diamond (1984) provides support for market-based finance that allows investors to share risk. In most cases if the listed firms cover all key sectors in the economy, the stock market can be a vehicle for risk sharing if the investors hold a diversified portfolio of stocks from firms belonging to different sectors. Jefferies (1995) highlights that Botswana Share Market has limited representatives of the manufacturing sector firms. He argues that the absence of agricultural firms and other primary sector firms inhibits the ability of that stock market to spread risk. Market-based

[17] For example foreign direct investments

finance also provides incentives to gather information about traded firms, which is then normally reflected in stock prices. This information in stock prices spurs effective managerial schemes within firms.

In summary, banks and stock markets play different roles that could impact the FDI-Growth nexus. Firstly, banks act as delegated monitors of firms, which is in contrast with the role of the stock markets that allows for long-term relationship with and commitments from the investor (Mahonye and Ojah, 2014). Therefore, banks ensure that management of firms are closely monitored to ensure that funds are efficiently used for purpose acquired (i.e. to take advantage of technology spillovers, purchase new equipment, etc.) and for the interest of shareholders. Stock markets, however, provide finance that result in diverse ownership of resources that means security-holders may waste resources by costly repetition of monitoring (Mahonye and Ojah, 2014). Secondly, in support of the role of the stock market, Allen and Oura (2004) states that market-based finance provides incentives to gather information about traded firms, which is then normally reflected in stock prices. This information are useful when mergers are acquisitions are required as a result of FDI inflow and spurs effective managerial schemes within firms.

#### 2.3.3.2 Empirical Evidence

However, most of the empirical literature that exists on the study of the role of financial development in the FDI-growth nexus have either captured financial development in the banking sector (Alfaro et al., 2003), while others have captured financial development in the stock market (Wurgler, 2000).

The earlier existing literature that have investigated the distinction between a bank-based financial system and market-based systems focused on comparing Germany, Japan, the United Kingdom (UK), and the United States (US). However, these studies investigated its relationship directly with economic growth and not through the FDI-growth linkage.

Germany and Japan are viewed as operating a bank-based system while the US and the UK as a market-based system. Germany and Japan are investigated in studies such as Hoshi et al., (1990); Morck and Nakkamura, (1999); Weinstein and Yafeh, (1998); Wenger and Kaserer (1998). They tried to measure if banks owned shares in companies or whether a company has a main bank respectively. From these studies, the distinction between bank-based and market-based financial systems was confirmed by evidence provided in the case of the countries

considered. On the other hand, in the investigation of Japanese financial system, the evidence to support the view of the importance of having a bank-based system was not found (Weinstein and Yafeh, 1998). Operating a bank-based financial system resulted in the economy performing poorly in the 1990s. Weinstein and Yafeh, (1998), argued that depending on banks alone can lead to a higher cost of funds for firms because banks extract rent from their corporate customers.

Levine and Zervos (1996) and Levine (1997), studied the US and the UK financial system. They focused on the importance of market takeovers as corporate control devices, and provide evidence in support of a market-based financial system. Levine and Zevros, (1998) studied a number of countries for the period 1976 to 1993 employing cross-country regression techniques, conclude that market-based systems provide different services from bank-based systems. Chakraborty and Ray (2006), find results that show that neither a bank-based system nor market-based system is better for growth in an economy. However, a bank-based financial system performs better than a market-based system in the countries studied.

However, Demirguc-Kunt and Levine (1996), in the study of 44 industrial and developing countries for the period 1986 to 1993, find results that show that countries with a well-developed bank-based financial system also have market-based institutions that are well-developed and countries with weak bank-based institutions also have weak market-based institutions. Thus, provide evidence to support the financial services view that the distinction between bank-based and market-based financial systems is of no importance. Levine (2002), in the study of 48 countries for the period 1980-1995 concludes that the structure of the financial system was not important for all the countries considered and in particular for the four[18] countries because they have very similar long-run growth rates. Beck and Levine (2002) in the study of 42 countries and 36 industries find similar results. The results from these studies provide evidence for neither the bank-based nor the market-based views instead they are supportive of the financial services view, that, well-developed financial systems are what matters for economic growth.

Empirical studies on this debate are very scarce for African countries. The few studies relating to Africa investigate the impact of the choice of financial structure on economic growth as done by the studies reviewed above. Ujunwa et al., (2012) in the study of Nigeria for the period 1992-2008, conclude that a bank-based system promotes economic growth while a market-

[18] Japan, Germany, UK and US.

based system has no effect on economic growth in Nigeria. Solo (2013), using heterogeneous panel approach, studied eleven African countries for the period ranging from 1988-2008 based on data availability for each country. The results show that the structure of the financial system doesn't matter in promoting economic growth in the countries studies. For economic growth to take place the overall level and quality of the financial system is what matters. However, Oima and Ojwang, (2013) find contrasting results in the study of selected ECOWAS countries as the structure of the financial system is important for economic growth.

In relation to the FDI-growth linkage very few studies use financial development indicators to determine if the inclusion or exclusion of a type of indicator would affect the impact of FDI on economic growth. Adeniyi et al., (2012) investigate the impact of FDI on economic growth in five (Cote d'Ivoire, Gambia, Ghana, Nigeria and Sierra Leone) ECOWAS countries using Johansen maximum likelihood approach and vector error correction model (VECM). The results show that the type of financial indicator used determined if FDI would have a positive effect on economic growth, and the degree of development of the financial system was also a determining factor. In the study of Nigeria, Nwosu et al., (2011) report similar findings. In particular, the authors find that FDI was significant using stock market indicators. They also found that liquidity in the financial market is important in the economic growth process in Nigeria.

In summary, reviewing the existing literature highlights the importance of identifying whether a specific financial structure should be pursued and developed by a country or whether a country should strive to develop the overall financial system so as to fully impact economic growth.

## 2.4 Methodology and Analytical Framework

This section specifies the model used and explains the detailed analytical techniques that are employed. Specifically, it explains the variables used to measure FDI, financial development, financial structure, economic growth, and the control variables. Lastly, it provides a simple description of the data set used and proposes *a prior* expectation of the variables.

### 2.4.1 Model Specification

This chapter empirically examines the impact of financial development based on different structures on the FDI-growth nexus. Based on theoretical and empirical considerations as well as data availability, as a starting point the direct effect of FDI on economic growth is estimated using the following equation:

$$dlnY_{i,t} = \alpha + \gamma_i dlnY_{i,t-1} + \delta_i \left(dFDI_{i,t-1} + dX_{i,t-1}\right) + \varphi^i \left\lfloor dlnY_{i,t-1} - \left\{\beta_o^i + \beta_1^i \left(dFDI_{i,t-1} + dX_{i,t-1}\right)\right\}\right\rfloor \epsilon_{it} \quad (1)$$

Where $dlnY_{i,t}$ represents economic growth measured by *GDP per capita* in purchasing power parity terms, $FDI_{it}$ is a measure of foreign direct investment. It is measured by net inflows (new investment inflows less disinvestment) from foreign investors, and is divided by GDP. $X_{it}$ is a set of control variables and $\epsilon_{it}$ is the error term. **γ** and **δ** represents the short-run coefficients of dependent and independent variables respectively, **β** are the long-run coefficients, and **φ** is the coefficient of speed adjustments to the long-run equilibrium. The subscripts ***t*** and ***i*** represent time and country.This model is used to investigate if FDI can have a positive impact on economic growth without the precondition of developing the financial system.

This study adopts the model used by Alfaro et al., (2003) to examine the role financial development plays in improving the effect of FDI on economic growth in Africa. To further examine the effect of the choice of financial structure to be developed (bank-based, market-based and financial service structure) the model developed by Rajan and Zingales (1996) is adopted. The combined model examines whether the inflow of FDI to Africa would cause a greater effect on economic growth if the bank-based, market-based or overall financial system is developed. This combined model and the estimation technique used is an added value to the

study done by Alfaro et al., (2003) and the existing limited studies of this effect in Africa[19] as it provides insights into the most appropriate financial system required.

In this model, the FDI variable is made to interact with the measure of overall financial system development and the measure of financial structure development (i.e. bank-based and market-based) respectively. These interaction variables are used as a regressor to test for the significance of overall financial development, bank-based development, and market-based development in enhancing the impact of FDI inflows in Africa. The measures of overall financial development, bank-based development, and market-based development are also included in the regression independently to ensure that the interaction terms do not proxy for FDI or the level of financial development.

Three interaction terms are generated. Interaction 1 captures the development of either the banks or stock markets (bank-based vs. market-based debate) and equals FDI multiplied by the Structural Aggregate $(FS)$: an aggregate index of the degree to which each country is comparatively bank-based or market-based. The second interaction term captures the development of the overall liquidity of the financial system. It equals FDI multiplied by $FDliquidiity$. Interaction 3 captures the development of the overall size of the financial system. It equals FDI multiplied by $(FDsize)$.

The model estimated is as follows: $dlnY_{i,t} = \alpha + \gamma_i dlnY_{i,t-1} + \delta_i \left(dFDI_{i,t-1} + d(FDI * FS)_{i,t-1} + d(FDI * FD)_{i,t-1} + d(FD1 * FD)_{i,t-1} + dOFD_{i,t-1} + dX_{i,t-1}\right) + \varphi^i \left|dlnY_{i,t-1} - \{\beta_o^i + \beta_1^i\left(dFDI_{i,t-1} + +d(FDI * FS)_{i,t-1} + d(FDI * FD)_{i,t-1} + d(FDI * FD)_{i,t-1} + dOFD_{i,t-1} + dX_{i,t-1}\right)\}\right|\epsilon_{it}$ (2)

Where, $FD_{it}$ represent the overall measure of the financial development of banks and stock markets in terms of size and liquidity, $FS_{it}$ measures the financial structure (bank-based development vs. market-based development), $OFD_{it}$ captures financial development in other types of financial systems such as insurance companies, bond markets, and mortgage markets. This variable is included to capture the impact of these relatively small but growing financial sectors in Africa. It is reported in the result as "financial system". $FDI_{it} * FD_{it}$ and $FDI_{it} * FS_{it}$ are the interaction terms. $X_{it}$ is a set of control variables, and $\mu_{it}$ is the error term.

[19] Adeniyi et al., (2012); Nwosu et al., (2011).

### 2.4.2 Expected Signs

The different theories propose different predictions about the signs of $\beta_{2i}, \beta_{3i}\ and\ \beta_{4i}$. The market-based view predicts that FDI would yield greater economic growth in countries with market-oriented financial systems and higher levels of financial development, thus implying $\beta_{2i} > 0\ and, \beta_{3i}\ and\ \beta_{4i}\ > 0$, when using the financial structure measure of the comparative size and activity of stock markets. Proponents of the market-based view also believe that state-owned banks and banks that do not face regulatory restrictions on their operations would exert a negative influence on resource allocation and growth. Thus, when using the measure of state ownership of banks, the market-based view predicts that $\beta_{2i} < 0$, but it predicts that $\beta_{2i} > 0$ when using the measure of regulatory restrictions on banks.

The bank-based view predicts that FDI would yield greater economic growth in countries with (i) bank-oriented financial systems, (ii) banks that face few regulatory restrictions on their activities, and (iii) higher levels of financial development. This prediction implies that $\beta_{3i} > 0\ and\ \beta_{2i} < 0$ when using the financial structure measure of the comparative size and activity of stock markets relative to banks or the measure of regulatory restrictions on banks. However, using state-owned measure, the bank-based view predicts that $\beta_{2i} > 0$.

The financial-services view predicts that FDI would yield greater economic growth in countries with a higher level of overall financial development, but the financial structure in itself does not matter. Thus, the financial-services view predicts that $\beta_{3i}\ > 0\ and\ \beta_{2i} = 0$.

### 2.4.3 The Method

This chapter uses the Dynamic fixed effect (DFE) model developed by Pesaran et al., (1999) with cross-correlated effects in the long run for estimation. The Cross-correlated coefficient technique includes the averaged coefficients on the cross-section averages of the dependent and independent variables in the regression (Pesaran, 2006). The DFE estimator is augmented with cross sectional averages of the dependent and independent variables to account for potential cross-sectional heterogeneity and dependency across panels. The nature of the panel data used in this study subjects it to having non-stationarity properties, cross-sectional dependence, and heterogeneity across panels. Static panel estimation methods such as pooled OLS, fixed effects, and random effects are unable to address these issues and can lead to significant bias in estimation results (Judson and Owen, 1999; Samargandi et al., 2013). The Dynamic fixed effect model is a specification for dynamic panel models. The DFE model allows for greater heterogeneity in the parameter in comparison to static panel estimation

methods (Weinhold, 1999). DFE models produce estimation results that are considerably less biased and warns researchers of the presence of extreme panel heterogeneity by providing its own integral diagnostics (Weinhold, 1999).

Specifically, the dynamic fixed effects model proposed by Pesaran et al., (1999) is used because it takes in account of the long-run equilibrium and considers that the process of dynamic adjustment can be heterogeneous (Demetriades and Law, 2006). Pesaran et al., (1999) state that using the autoregressive distributed lag ARDL (p,q) [20] technique, the dynamic heterogeneous panel regression can be incorporated into the error correction model and specified as follows (Loayza and Ranciere, 2006):

$$\Delta(y_i)_t = \sum_{j=1}^{p-1} \gamma_j^i \Delta\,(y_i)_{t-j} + \sum_{j=0}^{q-1} \delta_j^i\, \Delta(X_i)_{t-j} + \varphi^i \left[(y_i)_{t-1} - \left\{\beta_o^i + \beta_1^i (X_i)_{t-1}\right\}\right] \epsilon_{it} \quad (3)$$

The DFE estimator is used to estimate the equation above and is evaluated employing maximum likelihood. Where y is the GDP growth rate, X represents all independent variables, **γ** and **δ** represents the short-run coefficients of dependent and independent variables respectively, **β** are the long-run coefficients, and **φ** is the coefficient of speed adjustments to the long-run equilibrium. The subscripts ***t*** and ***i*** represent time and country.

The dynamic fixed effect estimator restricts the coefficients of the cointegrating vector to be equal across all panels. This is done by restricting the slope coefficient and error variances across all countries to be equal in the long-run. The DFE model further restricts the speed of adjustment coefficient and the short-run coefficients to be equal too (Peseran et al., 1998). However, for the consistency, efficiency and validity of this technique some requirements have to be met. First, the coefficient of the error term must be negative to infer the existence of a long-run relationship between the variables. Second, this technique assumes that it is feasible to consider the explanatory variable as exogenous, and the error-correction model residuals are serially uncorrelated (Samargandi et al., 2013).

### 2.4.4 Econometrics Problem: Endogeneity

So far there has been no discussion of the endogeneity problem. Theoretically it is plausible and also very likely, that both the magnitude of FDI and the efficiency of financial markets increase with higher growth rates. This would lead to an overstatement of the effects of each

[20] p is the lag of the dependent variable, and q is the lag of the independent variables.

of the two variables and their interaction on growth. The Dynamic fixed effect estimation technique provides consistent coefficients despite the possible presence of endogeniety because it includes lags of dependent and independent variables (Pesaran et al., 1999). It allows for heterogeneity in both the coefficient on the lagged endogenous variable and on the exogenous variable without introducing the simultaneity problem.

### 2.4.5 Description of Variables

Across studies, there exist no unique set of variables for analyzing the impact of FDI on economic growth. The variables mainly used are net flow of FDI and economic growth variables. This section gives a brief description of the variables used for estimation. The dependent variable is economic growth and is measured as GDP per capita in purchasing power parity terms. Appendix 1 provides a descriptive statistics of variable used.

#### 2.4.5.1 Financial System Development Variables

A variety of financial development measures has been employed in empirical studies, with most of the commonly utilized measures being the ratio of liquid liabilities of the banking system to GDP, private sector credit as a percentage of GDP, and the stock market capitalization as a percentage of GDP. Following King and Levine (1993), Levine and Zervos (1998), and Levin et al., (2000) this study examines the impact of the overall financial development (FD) measures. To compute this measure various banking system (BD) measures and stock market development measures (SD) measures are added together using index calculation and principal component analysis.

#### 2.4.5.2 Overall Financial Development (FD) Measures

The overall financial development (FD) measures are used as indicators of the overall level of development of the financial system in terms of size and liquidity. The FD measure captures the effect of the elements of both banking system development and stock market development on the FDI-growth nexus in each country. The overall financial development measure for the size of the financial system sums up various measures of the size of the banking system and stock market using the FINDEX formula. (i.e. a formula for calculating an aggregate financial development index). It is similar to that used by Demirguc-Kunt and Levine (1996), Allen and Ndikumana (2000), Ndikumana (2000), Bakwena *et a*l., (2008), and Mohamed and Sidiropoulos (2010). This variable is calculated by the author and is called the size of financial system development( $FDsize$). The overall liquidity of the financial system is calculated using

principal component analysis (PCA) using various measures of bank and stock markets liquidity. This variable is called the "liquidity of financial system development ($FDliquidiity$)."

To capture the development of other financial systems ($OFD$) such as insurance companies and bond markets the measure of total assets of non-bank financial institutions (NBFIs) to GDP is used.

The sub-sections below explain the banking system development measures and stock market development measures used in computing the overall financial system development measures both in terms of size and liquidity.

#### 2.4.5.3 Banking System Development (BD) Measures

The liquid liabilities ratio is used as an indicator of the size of the banking system, taken as the size of the financial intermediaries relative to the size of the economy. The liquid liabilities ratio is calculated as the ratio of the size of the economy (measured by the money stock – M3) to GDP. Higher liquid liabilities ratios indicate larger banking systems and the size of a banking system is positively related to financial services (World Bank, 2004). The second banking system size indicator is the private sector credit ratio which is calculated as the amount of domestic credit allocated to the private sector (by the banking sector) divided by GDP. The private sector credit ratio indicates the extent to which banks finance the economy and more specifically the extent to which banks finance private credit and private sector development (World Bank, 2009). Therefore, this ratio not only indicates banking system size but also shows how important the banking system is to the private sector of an economy. The banking system liquidity is measured using the financial system deposit ratio, and by extension, the aggressiveness of the bank's management. A high value for this ratio shows the bank's vulnerability to any sudden adverse changes in its deposit base. On the other hand, low value for this ratio is an indication that the bank is earning less than it should and is holding on to unproductive capital.

#### 2.4.5.4 Stock Market Development (SD) Measures

The size of the stock market is measured using the stock market capitalisation ratio and the total number of listed companies. Stock market size is related to the stock market's ability to diversify risk and mobilise capital (World Bank, 2009). Stock market capitalization gives an overall size indication and is computed by multiplying the share price by the total number of shares outstanding (World Bank, 2009). Market capitalization, therefore, reflects the market value of the stock market at a point in time, where a higher market capitalization signifies a

larger stock market. The market capitalisation ratio is calculated as the stock market capitalisation divided by GDP, and this gives an indication of stock market performance relative to a country's economic outlook revealing the significance of a stock market to a country. The second size measure is the number of listed companies, and this refers to domestically incorporated companies that are listed on the stock market at year end. The listed companies' measure excludes investment companies, mutual funds, and other collective investment vehicles (World Bank, 2009).

Liquidity refers to the ability of stock market participants to purchase easily and sell securities on a stock market. This is an important attribute of stock markets as a more liquid market improves capital allocation which, in turn, can enhance economic growth (World Bank, 2009). Two measures of market liquidity are examined below: the total value traded ratio and the turnover ratio. Total value traded ratio is the total value of stocks that are traded during the period divided by GDP (World Bank, 2009). The total value traded ratio provides a measure of stock market liquidity that complements the measure of stock market size (market capitalisation) as it indicates whether market trading can match market size. A higher value traded ratio means greater market liquidity. The second measure of market liquidity is the turnover ratio, which also measures transaction costs. Hence, a higher turnover ratio indicates greater market liquidity and lower transaction costs. Turnover ratio is computed as the total value of shares traded during the period divided by the average market capitalisation for the period (World Bank, 2009). The turnover ratio indicates stock market trading volume relative to stock market size, thus complementing both the total value traded ratio and market capitalisation ratio (Beck and Levine, 2004). Therefore, a smaller sized, liquid market might have a lower value traded ratio but a higher turnover ratio.

The table below summarizes a description of the FD, BD and SD measures used.

**Table 10: Summary list of the financial system development measures**

| **FD Measure:** | **Evaluates:** | **Computed as:** |
|---|---|---|
| Overall Size of the Financial system (FD size) | Size | Using the FINDEX formula |
| Overall Liquidity of the financial system (FD liquidity) | Liquidity | Using Principal Component Analysis (PCA). Financial aggregate. |
| **BD Measure:** | **Evaluates:** | **Computed as:** |
| Liquid liabilities ratio (LLR) | Size | M3 money supply divided by GDP |
| Private Sector Credit Ratio (PSC) | Size | Domestic credit provided by the private sectors divided by GDP. |
| Financial system deposit ratio (FSD) | Liquidity | Ratio of all checking, savings and time deposit to economic activity |
| **SD measures:** | **Evaluates:** | **Computed as:** |
| Market Capitalization ratio (MCP) | Size | Stock market capitalization divided by GDP |
| Total listed domestic companies (LCD) | Size | Listed companies on stock exchange at the end of the year |
| Stock traded total value ratio (STV) | Liquidity | Total value of shares traded during the period divided by GDP |
| Stock traded turnover ratio (STR) | Liquidity | STV/average market capitalization |

#### 2.4.5.5 Financial Structure Variables.

To examine the competing theories of financial structure, this study includes only one of the three measures of financial structure in the empirical analysis. The three measures are structural aggregate, regulatory restriction on bank activities and state ownership. However, restrict

aggregates (i.e. regulatory restriction on bank activities) and state ownership are not included in the estimation model because they are not available as annual data. They are used in ranking and grouping the sample countries into either bank or market-based financial systems as seen below in Table 13.

The "structural aggregate" variable is the indicator of the financial structure used in the empirical analysis, and it is an aggregate index of the degree to which each country is comparatively market- or bank-based. It is computed by the author and follows method adapted from Beck and Levine (2002) using measures of the size and liquidity of banks and stock markets to construct an aggregate index of the degree to which each country is comparatively bank-based or market-based. It is the first principal component of the combination of two measures (structural size and structural liquidity) that measure the relative liquidity and size of banks and markets. The first variable which equals the log ratio of total value of traded stock to domestic credit. The second variable equals the log of the ratio of market capitalization to domestic credit. With the former being an indicator of structural liquidity and the latter an indicator of structural size. Structural aggregate provides a measure of the comparative role of banks and markets in the economy and assesses the degree to which countries are bank-based or market-based. The variables are constructed such that positive and higher values indicate more market-based financial system while lower and negative values indicate bank-based financial system.

Regulatory restriction on bank activities is the second measure of financial structure. Although not included in the empirical estimation it is used in ranking the sample countries. It was computed in 1999 and taken from Barth et al., (2001) analysis of commercial bank regulations. It is an aggregate index of banks regulatory restrictions on ownership of nonfinancial firms and its activities in insurance, securities, and real estate markets (Beck and Levine, 2002). Restrict aggregates measure whether these activities and ownership are (1) unrestricted, (2) permitted, (3) restricted, or (4) prohibited (Beck and Levine, 2002). The maximum variation of bank's restriction aggregate indicator is between four and sixteen. Restrictions on bank activities, nonfinancial ownership, and control are indicated with higher values of restrict (i.e. the financial system is market-based), with lower values of bank restriction indicating a financial system in which banks face fewer restrictions and are therefore potentially more powerful (i.e. the financial system is bank-based).

The last financial structure measure to be examined is the measure of state ownership. Similar to the bank restriction measure it is only used in ranking sample countries. The measure of state ownership offers a broader conception of the financial structure and is equivalent to the share of assets owned by the government in a country's largest banks (La Porta et al., 2002). This measure of the percentage of government ownership in the largest banks asset is taken from La Porta et al., (2002). They derive this by calculating the share of government ownership and total assets in each of the ten largest banks in their sample and then multiply it by the total assets for each bank (Beck and Levine, 2002). According to the bank-based view, growth can be stimulated by a high percentage of state ownership of banks, while increase in inefficiency results from state ownership according to the market-based view (Beck and Levine, 2002).

#### 2.4.5.6 Foreign Direct Investment (FDI) Variables

FDI is measured as either the ratio of FDI net flows over GDP, which is the sum of equity, reinvestment of earnings, long-term capital, and short-term capital as shown in the Balance of payment, or the ratio of FDI net inflows over gross capital formation (GCF). This study employs the FDI net inflows as a percentage of GDP (FDI/GDP). FDI is the net inflows (new investment inflows less disinvestment) from foreign investors. In details, FDI net inflows in the host country is the value of inward direct investment made by non-resident investors, this includes reinvested earnings and intra-company loans, minus loan repaid and repatriated capital.

#### 2.4.5.7 Control Variables

The set of control variables ($X_{it}$) employed in this study, in addition to the three groups of financial development measures, includes inflation, government expenditure, exports, imports, infrastructure, and population growth. They account for the level of macroeconomic stability, the degree of openness of the economy, and the level of human capital within sample countries. These variables are as described below in details. The control variables used are similar to those employed in Beck et al., (2000), Levin et al., (2000), and Kiran et al., (2009).

The inflation rate (INFLA) and Government expenditure (GVTEXP) are used as indicators of macroeconomic stability. INFLA is measured as the percentage change in the consumer price index while GOVEXP is computed as the general government final consumption expenditure as a percentage of GDP. Exports and Imports are used to measure the degree of openness. Export (EXP) is measured as the value of all goods and other market services provided to the rest of the world as a ratio of GDP. Import (IMP) measures the value of all goods and other

market services received from the rest of the world as a measure of GDP. Population growth rate (POPGRWT) is used as the indicator for human capital and is measured as the annual percentage change in population size. Infrastructure is a policy variable and is measured as Telephone lines (per 100 people).

### 2.4.6 Data

This study uses annual panel data for 12 African countries (Botswana, Cote d'Ivoire, Egypt, Ghana, Kenya, Mauritius, Morocco, Nigeria, South Africa, Swaziland, Zambia, and Zimbabwe) from the period 1990-2010. The main data used in this study are measures of financial development and foreign direct investment indicators, including measures of real economic growth and its sources. The data sources include World Bank database, World Bank Development Indicators IMF database, and United Nations' Conference on Trade and Development FDI database.

To derive the overall development measures in terms of size and liquidity of the financial system and the structural aggregate measures the FINDEX formula and Principal component analysis technique is used.

#### 2.4.6.1 The Financial Index (FINDEX) Formula

To examine the effect of the overall development of the financial system on the FDI-growth relationship, we construct a composite index of banking system and stock market development measures. A conglomerate index of financial development (FINDEX) is calculated. The FINDEX formula is adapted from the algorithm developed by Demirguc-Kunt and Levine (1996), and it takes the value of zero if repressed and 100 if open. It is used to capture the overall financial development - size$(FDsize)$. The FINDEX formula can be specified as follows:

$$FINDEX_{it} = \frac{1}{m}\sum_{j=1}^{m} 100 * \frac{F_{j,it}}{F_j} \qquad (3)$$

Where, $F_{j,it}$ is an indicator of financial development, *i* is a specific country, *t* is a specific year, *m* is the number of financial development indicators included in the index, and $F_j$ is the sample mean of the individual financial development indicator. The index used in this chapter combines measures of the size of the banking system and stock market. It combines liquid liabilities, credit to the private sector, stock market capitalization, and number of listed companies. Demirguc-Kunt and Levine (1996), Allen and Ndikumana (2000) used a

combination of the size of the banking system, the size of the private nonbank financial corporations, private insurance companies and pension funds.

#### 2.4.6.2 Principal Component Analysis (PCA)

The overall development measure – liquidity ($FDliquidiity$) and structural aggregate measure are derived using principal component analysis (PCA). The PCA technique is commonly used in finance-growth literature to derive various aggregate measures, such as aggregate banking development indicators, stock market development indicators, overall financial development measures, financial integration measures, financial openness measures, and measures of industry performance, amongst others (see for example: Beck and Levine (2002); Huang, (2006); Aziakpono, (2008); Chinn and Ito, (2008); Gondo, (2009); Enowbi Batuo and Kupukile (2010)).

This study, therefore, follows a similar approach and derives the principal components of a set of variables which include the measures of the liquidity of the banking systems and stock markets: financial system deposit ratio, turnover ratio, and total value ratio. The method of principal component analysis is utilized to extract a single measure for the overall development of the financial system in terms of its liquidity. The structural aggregate is an aggregate index of the degree to which each country is comparatively bank-based or market-based. It is the first principal component of the combination of two measures (structural size and structural liquidity) that measure the relative liquidity and size of banks and markets. The variables used to construct these measures are: total value of traded stock, stock market capitalization, and domestic credit to the private sector. Structural liquidity equals the log ratio of total value of traded stock to domestic credit, and structural size equals the log of the ratio of market capitalization to domestic credit.

**Table 11: Principal Component Analysis for Overall Financial Development-Liquidity**

| Component | Eigenvalue | Difference | Proportion | Cumulative |
|---|---|---|---|---|
| Comp1 | 1.59 | 0.65 | 0.53 | 0.53 |
| Comp2 | 0.94 | 0.48 | 0.31 | 0.84 |
| Comp3 | 0.46 | . | 0.15 | 1.00 |

**Table 12: Principal Component Analysis for Structural Aggregate**

| Component | Eigenvalue | Difference | Proportion | Cumulative |
|---|---|---|---|---|
| Comp1 | 1.92 | 1.12 | 0.64 | 0.64 |
| Comp2 | 0.80 | 0.53 | 0.26 | 0.91 |
| Comp3 | 0.27 | . | 0.10 | 1.00 |

Tables 11 and 12 above shows the results of the principal component analysis. The overall financial development indicator ($FDliquidiity$) and structural aggregate equal the first component. It is the only component with an eigenvalue greater than 1 and explains about 53% and 64% of the variation of the dependent variable respectively. From Table 11 and 12, it is clear that the first principal components have the maximum explanatory power.

### 2.4.7 Country Classification of the Financial Structure

As stated above and from existing studies, three major indicators are used to measure the nature of the financial structure. These measures are structure aggregate, degree of bank restriction, and state ownership. Table 13 below presents the classification of countries used in this study according to these indicators. The three measures of financial structure frequently give quite different country classifications. The structural aggregate is calculated by the author, while the state ownership and restrict indicators are gotten from La Porta et al., (2002) and Barth et al., (2001) respectively.

**Table 13: Country Classification of the Financial Structure**

| Countries | **Structure aggregate** | Countries | **Restrict** | Countries | **State Ownership** |
|---|---|---|---|---|---|
| South Africa | -0.10 | Zimbabwe | 14 | South Africa | 0 |
| Egypt | -0.14 | Egypt | 13 | Zimbabwe | 30.0 |
| Zimbabwe | -0.57 | Morocco | 13 | Botswana | 45.3 |
| Morocco | -0.79 | Zambia | 13 | Zambia | 47.2 |
| Nigeria | -0.99 | Mauritius | 13 | Cote d'Ivoire | 47.2 |
| Botswana | -1.24 | Ghana | 12 | Kenya | 48.1 |
| Ghana | -1.29 | Nigeria | 10 | Morocco | 50.4 |
| Kenya | -1.37 | Botswana | 10 | Nigeria | 52.2 |
| Zambia | -1.46 | Kenya | 10 | Ghana | 56.2 |
| Mauritius | -1.64 | Swaziland | 10 | Mauritius | 58.4 |
| Cote d'Ivoire | -1.88 | South Africa | 8 | Swaziland | 74.6 |
| Swaziland | -2.79 | Cote d'Ivoire | 8 | Egypt | 89.7 |

While most of the countries fit the pre-conceived categorization as bank-based or market-based, some of the country classifications are counter-intuitive. Based on the structure aggregate measure, the twelve African countries are classified as bank-based as they all have negative structural aggregate values. As explained above, higher (positive) values indicate a country with a more market-based financial system, while lower (negative) values indicate a country with a more bank-based system. The reason for this is not necessarily because African countries have a well-developed banking system, but because most of the African countries have stock markets that are practically non-existence. As stated earlier, SSA had only five stock exchanges 20 years ago, and North Africa had only 3. Although, the number has increased to 20 stock markets in Africa, Africa's stock markets still remain the smallest when compared to any other region, both in terms of numbers of listed companies and market capitalization. Egypt and South Africa are the closest to being ranked market based. This is because they account

for the oldest stock markets in Africa which came into existence in the 1880s. The South African stock market, located in Johannesburg is the most sophisticated exchange comparable to exchange in developing countries.

Restrict offers some intuitively attractive characteristics. Lower values of restrict indicate a financial system in which banks face fewer restrictions and therefore a bank-based system. South Africa and Cote d'Ivoire are classified as countries which impose the least restriction on their bank activities making them more bank-based. Contrary to the structure aggregate measure where South Africa could be closely classified as market-based. Zimbabwe, Egypt, Morocco, Zambia, and Mauritius imposed large restrictions on their banks making it difficult for banks to operate, thereby classifying them as market-based system.

The table above shows that different measures of financial structure can give different country classification and produce some inconsistent rankings. This implies that countries can be classified wrongly into a bank-based or market-based financial system using a particular measure of the financial structure. Focusing on the wrong financial structure can affect the operations and development of the financial system, thereby resulting in little or no effect of FDI on economic growth in Africa.

## 2.5 Empirical Results

### 2.6.1 Panel Unit Root Test

To examine the role of financial development in enhancing the positive relationship between FDI and economic growth, several econometrics techniques would be employed. These methods aim to, firstly, determine whether the variables included in the model are stationary or not, secondly to examine whether any long-run relationship exists between various financial development measures and FDI, thirdly, if relationships are detected then proceed to estimate these long-run relationship

It is imperative that all the variables included in the model are assessed to determine whether they are stationary or non-stationary before identifying any possible long-run relationships and parameter estimation. This is because the stationarity properties can strongly influence the behaviour of a series and most economic variables are non-stationary in nature.

Although African countries have different economic and cultural characteristics, they are still interrelated because they face similar issues of unemployment, corruption, poverty, etc. This study test for non-stationarity of the panels' using the first and second generation panel unit root tests by Maddala and Wu (1999), and Pesaran (2007). Maddala–Wu (MW) test assumes cross-section independence while Pesaran's Cross-Sectional Dependence (CIPS) assumes cross-section dependence is in the form of a single unobserved common factor. The null hypothesis for both tests is that all panels contain unit roots across the observations, which is tested at 5% level of significance.

Appendix 2 and 3 presents the results of these tests with variables in levels 1(1). The Maddala and Wu unit root test without time trend[21] show government expenditure as the only stationary variable. However, the results for the Pesaran (2007) unit root test, all variables are non-stationary. Therefore, we can accept the null hypothesis for the MW and CIPS tests as all series are I(1), especially with higher lags.

### 2.6.2 Estimation Results

The Dynamic Fixed Effect (DFE) estimation method developed by Pesaran et al., (1999) with cross correlated effects in the long run is employed. DFE presents the long-run and short-run dynamic relationship between the variables and is used to estimate non-stationary heterogeneous panels in which the number of groups and number of time series observation

[21] Test was carried out with time trend with no difference in results.

are both large. Table 14 reports the result of the dynamic FE estimation of the long-run and short-run coefficients of the model without the interaction term.

**Table 14: Long-run and Short-run DFE result, Without Interaction term (Dependent variable ∆Log GDPPP)**

| Variables | Coefficient | Standard Error |
|---|---|---|
| *Long-run Coefficients* | | |
| FDI | 0.053 | 0.035 |
| Exports | 0.018* | 0.009 |
| Imports | -0.0067 | 0.014 |
| Inflation | -0.00006*** | 0.0000124 |
| Government Expenditure | 0.0015 | 0.0099 |
| Infrastructure | -0.028 | 0.024 |
| Population Growth | 0.799** | 0.323 |
| *Short-Run Coefficients* | | |
| Error correction coefficients | -0.056** | 0.019 |
| ∆FDI | 0.00084 | 0.0013 |
| ∆Exports | -0.00003 | 0.00057 |
| ∆Imports | -0.00101 | 0.00067 |
| ∆Inflation | -0.00045*** | 0.00070 |
| ∆Government Expenditure | -0.0003 | 0.0006 |
| ∆Infrastructure | -0.004 | 0.0033 |
| ∆Population Growth | 0.0151 | 0.0252 |

Notes: ***, **, * indicate that the p-values are significant at 1%, 5% and 10% respectively. Estimations are done by using (xtpmg) command in Stata.

The results presented in Table 14 above shows that FDI has a positive effect on economic growth in African countries, however, the effect is insignificant both in the short and long-run. This finding is similar to those found in Alfaro et al., (2003); Sukar et al., (2007); Aga (2014). This result highlights the assumption that the benefits associated with FDI inflows do not accrue automatically to host countries: some conditions have to be fulfilled. This is one of the problems that exist in the FDI literature, theoretically FDI is expected to have a positive and significant effect on economic growth; this is not always the case based on empirical evidence. This equivocal effect of FDI on economic growth forms the basis of the objective of this study. For the control variables, the long and short-run give inconsistent results. Exports, inflation,

and population growth have the expected signs and are significant in the long-run. This implies that economic growth in Africa would also improve through an increase in exports and the growth in population while an increase in inflation reduces the level of economic growth in Africa. In the short-run only inflation is significant and has the expected negative sign

Table 15 below reports the result of the dynamic FE estimation of the long-run and short-run coefficients respectively of the model with the interaction terms. The results show that the effect of FDI on economic growth becomes significant with the presence of the interaction terms. FDI affects economic growth positively in the short-run but has a negative effect in the long-run. The negative effect of FDI in the long-run can be explained thus: given that FDI is measured as the net inflow[22] from investors and in the long-run where all factors of production and cost vary, a disinvestment would imply that FDI would have a negative effect on economic growth.

Also, the neo-classical growth model postulates that FDI affects economic growth positively only in the short run and not in the long-run. This is because the long-run growth effect arises from exogenous factors (i.e. population growth and technological progress. Therefore, FDI would increase economic growth in the long-run if technology is affected positively and permanently. In addition, in the long-run most foreign investors would have handed over completed investment structures and packages to the management and control of local authorities and firms. However, if local institutions lack the necessary elements[23] required for the continuous survival of these investment projects, it could result to losses and even the collapse of these firms/projects in the long-run.

[22] FDI net inflow is the value of inward direct investment made by non-resident investors, less net of repatriation of capital and repayment loans.
[23] Example: Knowledge expertise, capital investment for upgrading to new technologies and equipment etc.

**Table 15: DFE result, With Interaction term**: (Dependent variable Δ Log GDPPP)

| Variables | Coefficient | Standard Error |
|---|---|---|
| *Long-run Coefficients* | | |
| FDI | -0.195* | 0.114 |
| Exports | 0.014* | 0.007 |
| Imports | -0.009 | 0.010 |
| Inflation | -0.00006** | 0.00003 |
| Government Expenditure | -0.001 | 0.011 |
| Infrastructure | -0.036** | 0.015 |
| Population Growth | 0.578** | 0.268 |
| Financial System | 0.024*** | 0.006 |
| FD(Size) | -0.007* | 0.004 |
| FD(Liquidity) | -0.057 | 0.142 |
| Structural Aggregate | 0.126 | 0.123 |
| FDI*Structural Aggregate | -0.02 | 0.205 |
| FDI* FD(Liquidity) | 0.006 | 0.015 |
| FDI* FD(Size) | 0.0015* | 0.0008 |
| *Short-Run Coefficients* | | |
| Error correction coefficients | -0.076** | 0.033 |
| ΔFDI | 0.019*** | 0.002 |
| ΔExports | -0.00009 | 0.0007 |
| ΔImports | -0.00098* | 0.00056 |
| ΔInflation | -0.00059*** | 0.00087 |
| ΔGovernment Expenditure | -0.00024 | 0.0006 |
| ΔInfrastructure | -0.002 | 0.003 |
| ΔPopulation Growth | 0.004 | 0.027 |
| ΔFinancial System | 0.0025* | 0.0013 |
| ΔFD(Size) | 0.0003*** | 0.00008 |
| ΔFD(Liquidity) | 0.018 | 0.0202 |
| ΔStructural Aggregate | -0.022 | 0.014 |
| ΔFDI*Structural Aggregate | 0.003*** | 0.0009 |
| ΔFDI* FD(Liquidity) | -0.0009 | 0.0010 |
| ΔFDI* FD(Size) | 0.0001*** | 0.000025 |

Notes: ***, **, * indicate that the p-values are significant at 1%, 5% and 10% respectively. Estimations are done by using (xtpmg) command in Stata.

Interaction 1 is insignificant in the long-run and positive and significant in the short-run. Interaction 2 is insignificant both in the short and long-run. In the short and long-run interaction

3 is both positive and significant. The development of the overall size of the financial system is positive and significant both in the short and long-run. Based on the hypothesis of the market-based view, $\beta_{2i}$ has the expected sign in the short run but not in the long-run. This implies that in the short run market–based financial systems would experience greater economic growth as a result of inflow of FDI. However, this cannot be said to occur in the long-run.

On the other hand, the measures of overall financial development and structural aggregate alone give inconsistent results. The structure and liquidity of the financial system are both insignificant both in the short and long-run. The size of the financial systems is significant both in the short and long-run, however, it would have a negative effect on economic growth in the long-run. This may infer that developing a well-balanced financial system is a means to an end and not an end itself (Alfaro et al., 2003). The measure of the development of other financial system has a positive and significant effect both in the short and long-run. In addition, the control variables (export, population growth, inflation and infrastructure) are significant in the long-run. Government expenditure and imports are not significant.

In sum, the results indicate that overall financial development would improve the effect of FDI on economic growth in African countries. In particular, developing the size/activity of the financial system has more impact than the liquidity in Africa. This is because of the illiquid nature of Africa's financial systems. The illiquidity of Africa's financial system would limit the effect of financial development on Africa's economy. However, different theories of the financial structure are supported in the short run and long-run respectively. Therefore, in terms of the nature of the financial structure it is necessary for African countries to have a balanced financial system as a bank-based or market-based system is insignificant in the long-run and a market-based is supported in the short-run. We can therefore conclude that this study supports the financial service view Merton and Bodie (1995); Levine (1997), that emphasis on the creation of better functioning banks and markets rather than focusing on a particular financial structure

In addition, the control variables (trade, government expenditure, inflation and infrastructure) are significant. Population growth is the only insignificant control variable. Trade openness is significant at the 1% level of significance and has the expected positive sign. The degree of openness to trade would result in 40% increase in economic growth in Africa. Government expenditure is also significant at 1% and has a positive coefficient. This implies that public spending by the government would increase economic growth by 20%. These results are

consistent with that of Yasin (2011). Inflation is significant at 5% and has the expected negative sign, implying a reduction in economic growth by 5.6%. The level of infrastructure is also significant at 1% and would result in a 20.3% present increase in economic growth. As in most previous similar studies, the population variable is insignificant. However, this could be due to the fact that the labour force has been proxy by the growth rate in population rather than by the actual growth rate in labour force.

## 2.6 Conclusion and Policy Implications

After reviewing theoretical and empirical literature, this empirical analysis employed the dynamic fixed effect estimator to examine the role of financial development (identifying whether African countries should focus on developing either the banking system or stock markets or the overall financial system) in improving the positive impact of FDI on economic growth in twelve African countries over the period 1990-2010.

This study has established that FDI is one of the major factors in stimulating economic growth in African countries. It could bring important benefits such as capital inflows, technology spillovers, human capital formation, international trade, job creation and the enhancement of enterprise development. However, a well-functioning and developed financial system plays an important role in ensuring that the benefits derived from FDI are fully enhanced and negative effects are minimized in the recipient country's economy. This study provides evidence that the development of the overall financial system facilitates the effects of inward FDI and significantly contributes to economic growth.

In the short run, the market-based structure tends to promote a positive relationship between FDI and economic growth than bank-based structure. However, in the long-run a bank-based or market-based system is insignificant. The overall financial system development enhances the relationship between FDI and economic growth both in the short run and long-run. This implies that if economies in Africa improve their efficiency in the provision services, both in the short and long-run, the contribution of the financial system would be the same whether the economy is market or bank-based. Therefore, the concern of structure should be discussed on the structure efficiency area rather than the type of structure.

In summary, the results indicate that distinguishing countries by overall financial development is more beneficial than distinguishing countries by whether they are relatively bank-based or market-based. Therefore, supporting the financial service view, African countries would benefit more from FDI if the overall level of financial development is high. These results send a strong message to policy makers. Africa economies should work towards having a balanced financial system consisting of efficient and well-functioning banks and stock markets. Instead of supporting policy tools that support the development of only banks or stock markets, policy makers should focus on implementing structural reforms that foster the development of financial intermediaries and markets.

# Chapter 3: REGIONAL FINANCIAL INTEGRATION IN AFRICA

## 3.1 Introduction

The previous chapter suggests that the development of the overall financial system enhances the effect of FDI on economic growth, thereby promoting sustainable economic growth in Africa. Recent studies by the World Bank and other financial institutions show that financial development is significant for sustainable economic growth and poverty reduction in Africa (African Development Bank, 2010). However, despite the efforts put in by African countries to strengthen and modernize their financial systems, Africa's financial systems still lacks depth, serving only a small proportion of the growing population and providing limited number of services at relatively high cost (African Development Bank, 2010). Studies by the World Bank and other financial institutions suggest that the promotion of regional financial integration (RFI) could potentially address the problems associated with the underdeveloped nature of Africa's financial system.

This major objective of this chapter is to assess the progress made towards regional financial integration in four major Regional Economic Communities (RECs) that have recorded theoretical progress towards RFI. This is done by empirically measuring the extent of financial integration in Africa's RECs using beta and sigma convergence to measure the speed and degree of regional financial integration. This chapter also assesses the potential contribution of RFI towards promoting financial development and economic growth in Africa. This is done by analysing how RFI could theoretically address the problem of underdeveloped financial systems in Africa, and the contributions RFI has made thus far in African financial development and economic growth.

African countries are currently pursuing the agenda of regional financial integration and monetary union formation to promote sustainable economic growth and reduced poverty level. An integrated financial market promotes the creation of large and liquid financial markets that are more attractive to investors, increasing foreign investments and leading to economic growth (Lovegrove et al., 2007). Consolidated financial systems are capable of expanding the scale and effectiveness of financial systems, thereby correcting the deficiencies in Africa's economy resulting from the small scale operations of most African financial systems (African Development Bank, 2010; Wakeman-Linn and Wagh, 2008). The establishment of monetary unions creates larger market size, resulting in lowering productivity cost and increasing competitive ability (Oshikoya, 2010). However, the formation of monetary unions also comes

with its costs and there are prerequisite conditions to be met to ensure its sustenance and effectiveness.

The African Economic Community (AEC) was established by The Abuja Treaty on 12 May 1994. The strategy for integration in Africa is the gradual integration of activities of Regional Economic Communities (RECs)[24] (Mougani, 2014). Regional Economic Communities (RECs) according to the African Union are the official regional representatives of African countries. Each RECs are taking steps and have set time frames towards the establishment of integrated financial systems and monetary unions. The eight RECs recognised by the African Union (AU) are: Arab Maghreb Union (AMU), Common Market for Eastern and Southern Africa (COMESA), Community of Sahel-Saharan States (CEN-SAD), East African Community (EAC), Economic Community of Central African States (ECCAS), Economic Community of West African States (ECOWAS), Intergovernmental Authority on Development (IGAD), Southern African Development Community (SADC). Each RECs is committed to the establishment of an economic union in their sub-region in accordance with the Abuja Treaty (Mougani, 2014).

The African Development Bank (ADB) provides the framework to be followed by each Regional Economic Communities (RECs) for the establishment of integrated regional markets and monetary unions. According to Mougani (2014) it is becoming more evident that Africa's RECs are deviating from the set-out framework and pursuing the agenda of RFI and monetary union formation too ambitiously and with less caution. The West African Monetary Zone (WAMZ) region has had to postpone the launch date of its single currency three times (the initial set date was January 2003 to July 2005 and December 2009) due to inadequate preparation. A further postponement was made in June 2009 for a new launch date in 2015 for WAMZ region (which has not been met) and 2020 for the ECOWAS currency. The Eastern African Community (EAC) region is still yet to establish the single currency after rescheduling the launch date from 2015 to 2012. The Common Market for Eastern and Southern Africa (COMESA) and Southern African Development Community (SADC) regions are targeting 2016 for the launch of their monetary union and single currency by 2018 (Debrun et al., 2011). However, progress has been slow, and these could lead to the likely postponement of the launch dates. In general, Africa RECs are failing to meet their targets of monetary unions and single

[24] Continental components of the AEC

currency formation, leading to loss of credibility in the process, and resulting to decreasing support from market participants and the general public (Mougani 2014).

According to World Bank (2014), Central African Economic and Monetary Community (CEMAC), West African Economic and Monetary Union (WAEMU), and Southern African Customs Union (SACU) have gone furthest in regional financial integration in Africa while COMESA has recorded little progress regarding financial integration. However, most of these findings do not have any empirical evidence to support them as they are mostly theoretically based. Very few studies have empirically examined the level of regional financial integration in Africa's RECs. Sy (2006) assess the extent of financial integration in the West African Economic and Monetary Union (WAEMU), Kaijage and Nzioka (2012) investigate the extent of financial integration in East Africa, and Yabara (2012) examine capital market integration in East African Community. These three papers examine only a particular region of Africa and will therefore not give an accurate knowledge on Africa's economy as a whole.

Espinoza and Kwon (2009) reports the measurement of regional financial integration as a recent topic. The creation of financial integration indicator was fostered by European integration (Adam et al., 2002). They recorded studies such as Park and Bae (2002), Cowen et al., (2006) and Kim et al., (2008) that measured the extent of financial integration in developed countries. Given the unavailability of data and that financial markets are integrated when the law of one price holds,[25] inter-bank market integration is assessed using measures of interest rate convergence. Beta convergence and sigma convergence are the two measures used in this study. Beta convergence evaluates the speed[26] of convergence while sigma convergence measures the degree[27] of integration (Adam et al., 2002).

The small and fragmented nature of Africa's financial system indicates a need for integration of their system. The integration of Africa's financial system is a major strategy for transforming a least developed continent to one consisting of a global force of strongly united developed nations (UNECA, 2008). This would provide African countries with the potential to alleviate poverty and unlock economic opportunities. Some of the advantages of an integrated financial system are: (i) diseconomies of scale associated with small financial markets are eliminated, (ii) the range of choices for savings and investments increases, (iii) financial products and

[25] This means that, investment returns and prices of similar assets within different countries in a given region converge to a common figure.
[26] The rate at which markets integrate.
[27] To what extents are market already integrated.

services supply are enhanced, and (iv) financial systems' regulatory and supervisory bodies become more efficient and are protected from internal excesses (Mougani 2014).

Given the potential benefits of financial integration, the acceleration of regional integration and cooperation is of utmost importance to African now. RFI is widely accepted as an essential tool for the expansion of Africa's economic opportunities. This is the major reason for the creation of several RECs, the establishment of African Economic Community (AEC), and the Constructive Act of African Union by the Abuja Treaty (UNECA, 2008). African RECs by identifying the need to pool financial resources together have embarked on the establishment of sub-regional capital markets.

Analysis of the results shows that although regional financial integration is taking place, various regions are progressing at different speed and degree. Also, the progress of individual countries towards achieving convergence targets is uneven. Therefore for African RECs to benefit from the processing of RFI Africa's' RECs would be better off slowing down on the agenda of monetary union formation while focusing on agendas and policies that would strengthen financial integration in their regions.

This chapter is structured as follows. Section 3.2 provides an overview of the process and progress towards RFI in Africa's RECs. Section 3.3 provides a brief overview of existing literature on measuring regional financial integration and the potential cost and contribution of RFI to financial development and economic growth in Africa. Section 3.4 provides the data and econometric methodology used in the study. Section 3.5 reports and discusses the findings of the study. While the summary of findings and policy recommendations are presented in session 3.6.

## 3.2 Process and Progress of Regional Financial Integration (RFI) and Monetary Union Formation in Africa

This section provides an analysis of the framework of the process of RFI adopted by the African Union and the progress made.

### 3.2.1 Process of Regional Financial Integration and Monetary Union Formation

The African Development Bank (ADB) provides the framework of RFI that each REC is to follow for the establishment of integrated regional markets. The framework (presented below) adopts a policy-driven approach to financial integration. A policy-driven approach outlines macroeconomic stability and agreements to establish free trade areas (FTA) as some pre-condition for financial integration.

**Table 16: Stages of RFI in Africa**

| Stages of RFI | Domestic measures | Regional measures |
|---|---|---|
| Preconditions | Macroeconomic and fiscal stability<br>Bank Soundness | |
| Stage 1: Preparatory<br>Modernization of financial system through the implementation of parts of international financial standards and initiation of information exchange. | Improve national payments systems(RTGS) to reduce payment delays and transfer costs<br>Strengthen bank supervision and regulatory framework ('partial' compliance with BCPs)<br>Improve accounting standards (IFRS)<br>Improve core elements of legal system (land and corporate registries, property rights, contract enforcement) | Agreement to establish FTA<br>Regional secretariat to advance and implement regional agenda<br>Exchange of information and regular meetings between monetary and financial authorities<br>Regional committees to delineate areas and modalities of the integration process<br>Bilateral and regional agreements to offer technical assistance to 'less developed' members to upgrade their financial systems |
| Stage II: Harmonization<br>Taking steps to harmonize and link regional financial policies, institutions, and rules and regulations. | Expand payments systems to include electronic fund transfers, security deposit systems, and payment switches<br>Devise cost-effective systems for small transfers<br>Further strengthen bank supervision and regulation by 'large' compliance with BCPs, IAIS, & IAS<br>Remove intraregional exchange controls<br>Liberalize foreign capital inflows | Fully effective FTA<br>Agreement on relevant convergence criteria (voluntary compliance)<br>Establishment of (advisory) surveillance and monitoring mechanism<br>Regular meetings between country regulators and supervisors<br>Harmonization of policies regarding inward capital flows<br>Liking national payments systems (REPSS<TARGET) |

| | | |
|---|---|---|
| | Strengthen stock exchange (if it exists) rules and regulations, and implement supervision ((IOSCO) principles<br>Substantially complete the modernization of the financial systems, making them market-based;<br>Central bank autonomy and reinforced supervisory authority<br>Remove barriers to entry of regional and foreign banks to improve competition<br>Develop national credit information | Establish private financial sector consultative bodies (association of bankers, accountants, stock exchanges, etc.)<br><br>Establish regional physical infrastructure development bodies |
| Stage III: Cooperation<br>Members strengthen and make more operative the regional surveillance and monitoring mechanisms | Gradually liberalize exchange controls vis-à-vis the rest of the world<br>Implement regionally agreed comprehensive convergence criteria.<br>Coordination of monetary and exchange rate policies | Agreement to establish customs union<br>Regional FDI regime<br>Establishment of comprehensive convergence criteria (mandatory) and its monitoring with MDBs/IFIs support<br>Full harmonization of regulatory, supervisory, and accounting standards<br>Single bank licensing, cross-border participation of regulators and supervisors in bank supervision<br>Development of a centralized credit information system<br>Development of region-wide securities market infrastructure and regulations |
| Stage IV: Integration<br>Members move to unify their institutions, rules and regulations, as well as financial products. | Adapt/modify domestic legislative and regulatory requirements and institutional set-up to conform to the requirements of this stage of RFI | Fully effective customs union<br>Unified stock exchange<br>Adoption of broad legal system (e.g. OHADA treaty by WAEMU countries)<br>Partial pooling of reserves<br>Regional bond market |
| Stage V: Unification<br>In this stage members yield sovereignty in monetary policy to a regional authority | Exchange local currency for a regional currency<br>Reserves in common currency | Regional central bank<br>Regional common currency |

Source: ADB (2010) p36-p37.

The stages of RFI do not have clear-cut categorization, but there is a need to determine measures to evaluate a country's progress towards RFI. In the preparatory stage, policy makers are the major performers responsible for modernising domestic financial systems, especially payment systems. Also, members of various RECs should formalise all agreements to enter into the Free Trade Agreement (FTA) with each member having access to information on the progress made by member states towards RFI. Harmonization stage involves the introduction and compliance to international standards and practices to ensure regional financial systems are harmonized. Also, at this stage all forms of exchange controls are eliminated, and members fully establish the FTA.

Members agree to be monitored and evaluated by the regional ministerial council on their cooperation towards implementing agreed convergence criteria at the cooperation stage. Monetary and exchange policies cooperation are also improved at this stage. The next stage in the integration process focuses on the regional level. At this stage customs union become fully functional, financial institutions are integrated, and regulatory and supervisory functions such as single bank licensing and a single regulatory agency are in operation. The unification stage which is the final stage entails the introduction of a common currency and common central bank.

This RFI road map underlies each process supports the other. In this policy-driven approach, a fully-integrated financial system is achieved at stage four before the formation of a monetary union in stage five. This proposed framework also implies that the pre-conditions for the successful establishment of monetary union (Optimal Currency area theory) are impeded in the implementation of most, if not all the measures included in the early stages of integration (ADB 2010). Therefore, it is implied that a fully integrated financial system has fulfilled most of the pre-conditions for monetary union formation.

### 3.2.2 Progress towards Regional Financial Integration and Monetary Union Formation

The pursuit of integration programs by Africa has been on-going for an extended period. As far back as 1960 till presently, several groups of integration committees have been formed with some fading away. Africa Common Market (ACM) and the Equatorial Customs Union (ECU) both established in 1962 are examples of the first group of committees formed. ACM comprised of Algeria, Egypt, Ghana, Guinea, Mali, and Morocco while ECU included Cameroon, Central African Republic, Chad, Congo, and Gabon. The latter led to the present

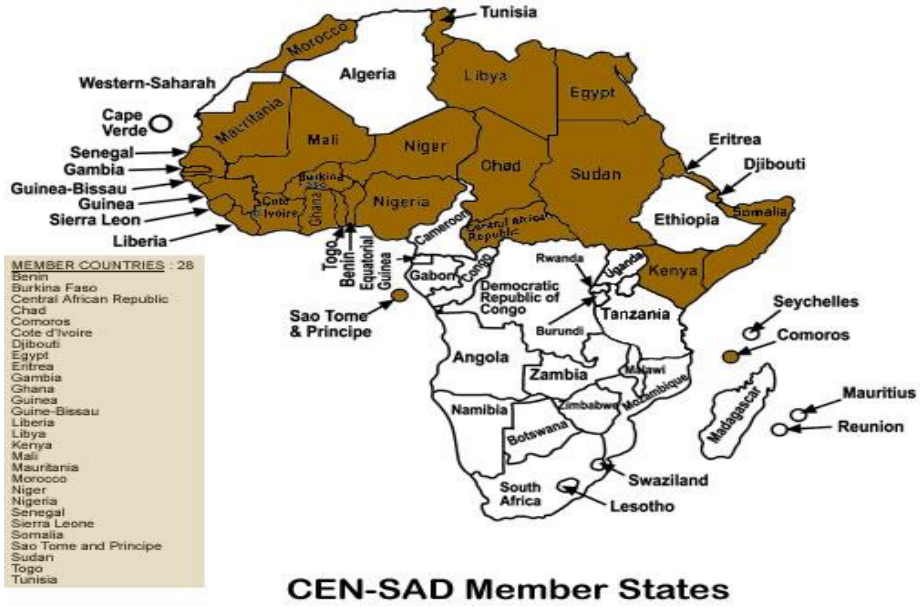
CEMAC and former EAC in 1967 which until its demise comprised of Kenya, Tanzania and Uganda (UNECA, 2008). There has been the emergence of new groups, and the Organisation of African Unity (OAU) Heads of State and Government in June 1991 signed the Abuja Treaty propagating the African Economic Community (AEC). In May 1994, the AEC came into effect and was endorsed by some countries[28] (UNECA, 2008).

Appendix 4 shows a list of the major RECs and their corresponding subgroup. The Regional Economic Communities (RECs) are currently the regional blocs for integration in Africa. However, most of these RECs although constituting the "building bloc" of the AEC have overlapping membership (i.e. countries belong to multiple regional agreements).

### 3.2.2.1 The Community of Sahel- Saharan States (CEN-SAD)

CEN-SAD was established on 4th February 1998, and it became a regional REC on 12th July 2000. It started with a membership of 6[29] countries and has grown to become a 29 member community with Cape-Verde being the latest addition. The headquarters of CEN-SAD is in Tripoli Libya. CEN-SAD objectives include the establishment of an economic union with a common market which promotes free movement of persons, goods, and services.

**Figure 12: Map Showing Member countries of CEN-SAD**




Source: UNECA website

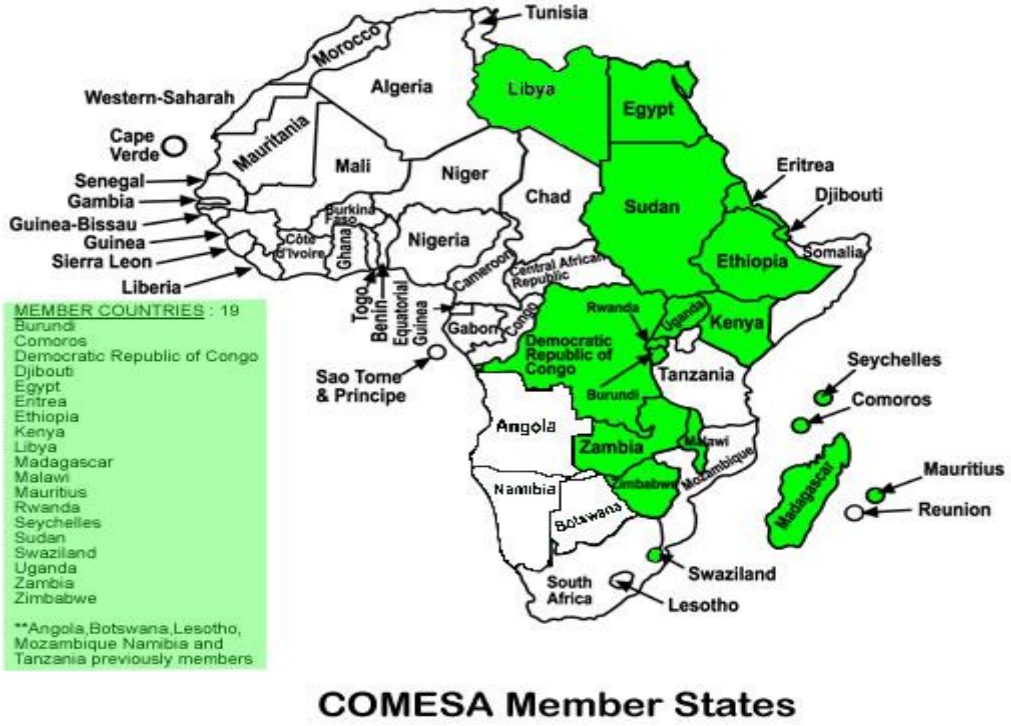
[28] The AEC has been endorsed by all African countries of the African Union, but Morocco withdrew from the OAU- and is therefore not a member of the African Union.
[29] Burkina-Faso, Chad, Libya, Mali, Niger, Sudan

CEN-SAD is still in the process of establishing a free trade area and has made no progress towards establishing a customs union[30]. Agreements have been made for the establishment of a free-trade area some day with no target date set. It can, therefore, be said that CEN-SAD is still yet to fulfil the preconditions for RFI and has made microscopic progress towards RFI. The major reason for this is the occurrence of political conflicts in member states and overlapping membership of all its members (i.e. its members are also members of other RECs).

### 3.2.2.2 The Common Market for Eastern and Southern Africa (COMESA)

COMESA was formed in December 1994 and currently has 19 members with a total population of approximately 400 million (ADB, 2010). The strategy of COMESA entails an emphasis on the integration of the economy via the removal of economic and trade barriers. A partial free trade area (FTA) was formed in October 2000, 11 out of the 19 members participated. Subsequently, by June 2007 participation has increased to 13 members, with the outstanding six members reducing intraregional tariffs by 60 to 90 percent.

**Figure 13: Map Showing Member countries of COMESA**




Source: UNECA website

According to ADB (2010), the major obstacle to RFI in COMESA is the wide financial and economic divergence among member states. Countries such as Burundi and Ethiopia have

[30] A FTA is an area in which countries have agreed to trade with one another freely, while a custom union is a FTA with common foreign trade policy (i.e. common policies for trading with countries outside the union).

financial systems that are less sophisticated and with "less developed and regulatory frameworks". Other countries such as the Democratic Republic of Congo, Sudan and Zimbabwe are restrained by persistent political problems. With the lack of commitment by others to an open and liberal system which is a prerequisite for RFI, the implementation of RFI has been a challenge in COMESA. The overlapping membership of COMESA members is also a major problem, 12 out of 19 COMESA members are also members of two or more RECs.

Assessing COMESA progress towards financial integration, it can be noted that member states have made noticeable progress towards modernizing their financial systems, although the various countries are at differing reform levels (ADB, 2010). Through the leadership of COMESA Secretariat, the region has taken advantage of the reforms implemented at national levels to promote financial integration among members. However, COMESA region still needs additional measures that would ensure capability between their systems and international standards (ADB, 2010).

"The adoption of the 2003 Banking Supervision and Harmonization Framework" was the first major internal RFI initiative carried out by COMESA region (ADB, 2010). The framework identifies areas that need harmonization and recommends minimum standards and timelines for these in the COMESA region. This was followed by the adoption of the Plan for the Effective Harmonization of Financial System Development Stability (FSDS) in 2007. It includes a detailed plan[31] of action with some recommendations.

The integration of the financial system in most COMESA member states seems to be taking place at the ownership level of banks (ADB, 2010). Commercial banks have shown interest in expanding their operations to nearby countries, although this is being undertaken with a lot of caution because of the difficulty with risk assessment in Africa associated with corruption. An example of this is the opening of subsidiary branches in Rwanda, Sudan and Uganda by Kenyan Commercial Bank among others. Also, in COMESA, member states cross-border ownership of banks has increased. Foreign banks are allowed free access in COMESA states except in Eritrea, Ethiopia, and Libya. This is a major motivation for financial integration in COMESA region (ADB, 2010).

Presently, existing initiatives are being carried out by COMESA to enhance integration and the formation of a monetary union. Two sub-committees have been set up namely: the Monetary and Exchange Rates Policies Sub-Committee and the Financial System Development and

[31] Detailed Plan can be found in ADB (2010).

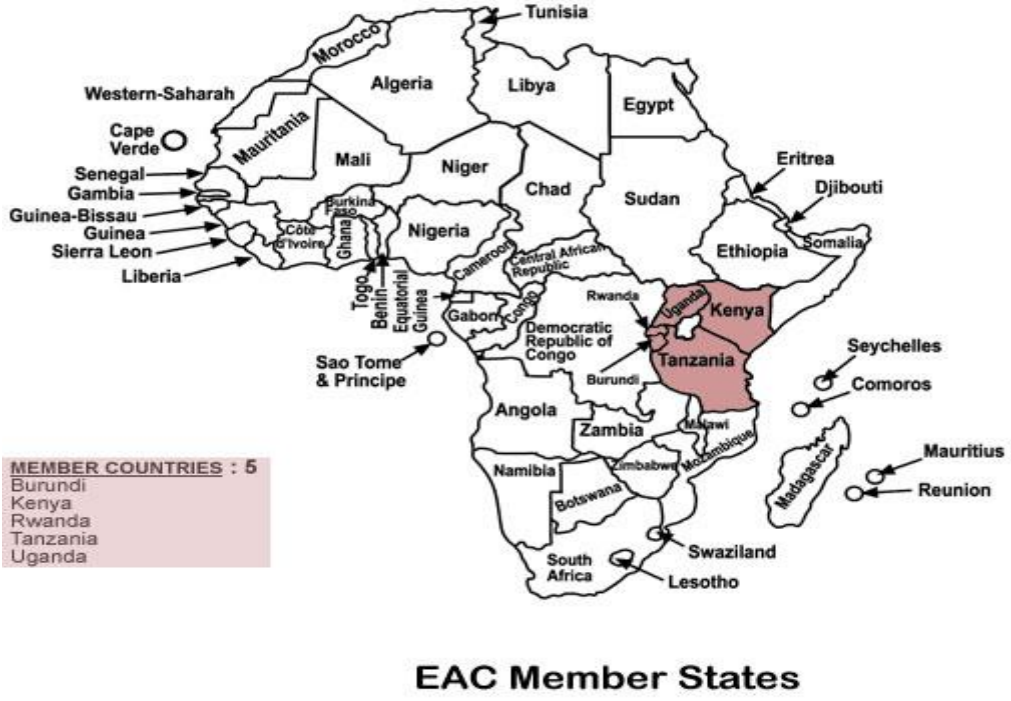
Stability Sub-Committee. The responsibility of the Monetary and Exchange Rates Policies Sub-Committee is to develop suitable strategies and instruments for effective monetary policies. The Financial System development and stability sub-committee is responsible for developing strategies that would promote the diversification of financial instruments and institutions at both national and regional levels. They are also responsible for monitoring bank regulation and supervision.

Despite COMESA's efforts to enhance RFI, it has not been able to establish a customs union fully although it has been launched. Also, macro stability an essential precondition for RFI is still not achieved by some countries and member countries are not modernized and harmonized at a particular stage. COMESA can be said to be in stage 1 and making progress towards moving to stage 2 of the RFI process.

### 3.2.2.3 The East African Community (EAC)

The East African Community (EAC) was originally founded in 1967 but collapsed in 1977. It came back into existence on 7th July 2000 by the treaty signed by the original founding three partner States – Kenya, Tanzania, and Uganda. It currently has five members and its headquarters is located in Arusha, Tanzania.

**Figure 14: Map Showing Member countries of EAC**




**EAC Member States**

Source: UNECA website

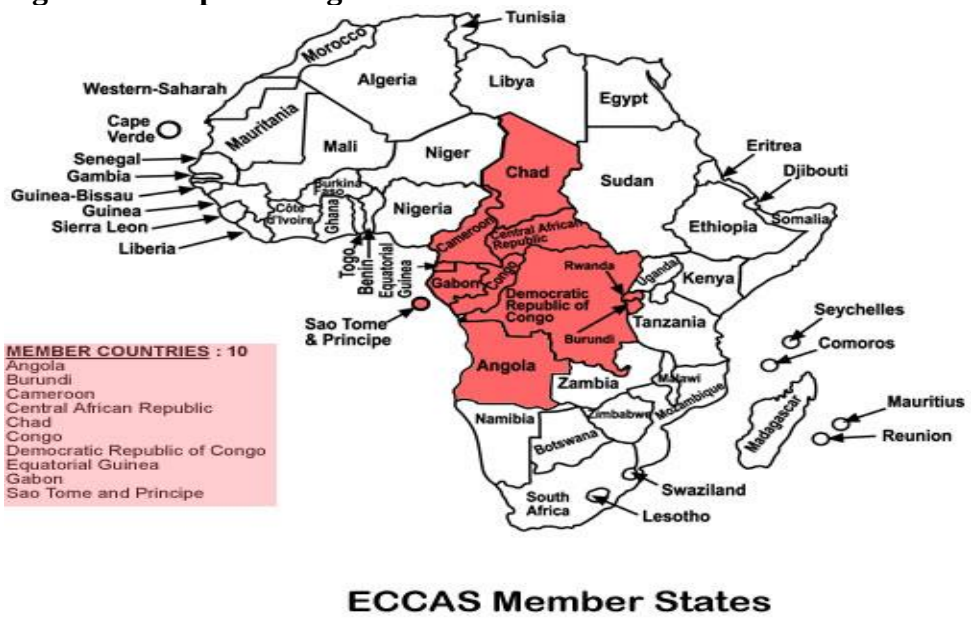
EAC has achieved the primary stage of financial integration as it has established a free trade area and has expanded it to include member states of COMESA and SADC. It also established a customs union which became fully effective on 1st January 2010. In 2009, the five Head of State adopted a Protocol to establish a Common Market in EAC. The implementation of Common Market Protocol is at the advanced stage and will facilitate the free movement of goods, services, labour and capital.

Some other progress EAC has made towards financial integration include: the adoption of regionally recommended fiscal initiatives by member states, the implementation of five-year financial market development plan under the aegis of the Monetary Affairs Committee and EAC Secretariat. Based on the progress made, EAC can be said to be progressing towards the fourth stage of the RFI process. However, despite the progress made by EAC, the financial systems of some members still lack sustainable microeconomic environment, appropriate financial market infrastructure, and effective regulatory framework. These issues possess serious challenges to the progress of financial integration in the EAC.

### 3.2.2.4 The Economic Community of Central African States (ECCAS)

The Economic Community of Central African States was established by the Brazzaville Treaty in 1964 and became active in 1966 with five[32] founding members.

**Figure 15: Map Showing Member countries of ECCAS**




**ECCAS Member States**

Source: UNECA website

[32] Cameroon, Central African Republic, Chad, Congo and Gabon.

It currently has ten members and the headquarters is in Libreville, Gabon. Due to conflicts in the region, ECCAS was passive for several years after formation. The objective of achieving a common market was shifted and all focus channelled towards restoring peace and security in the region. ECCAS launched its Free Trade Area in 2004 but still faces challenges towards the implementation. Further, no progress has been achieved in the formation of a customs union. It is therefore lagging behind in the financial integration agenda and is still yet to fulfil the pre-conditions for RFI.

#### 3.2.2.5 The Economic Community of West African States (ECOWAS)

ECOWAS is made up of 15 countries and was established in May 1975, with a combined population of about 275 million. The objective of the first Treaty of ECOWAS was the promotion and acceleration of economic and social development amongst member states via effective economic co-operation and integration.

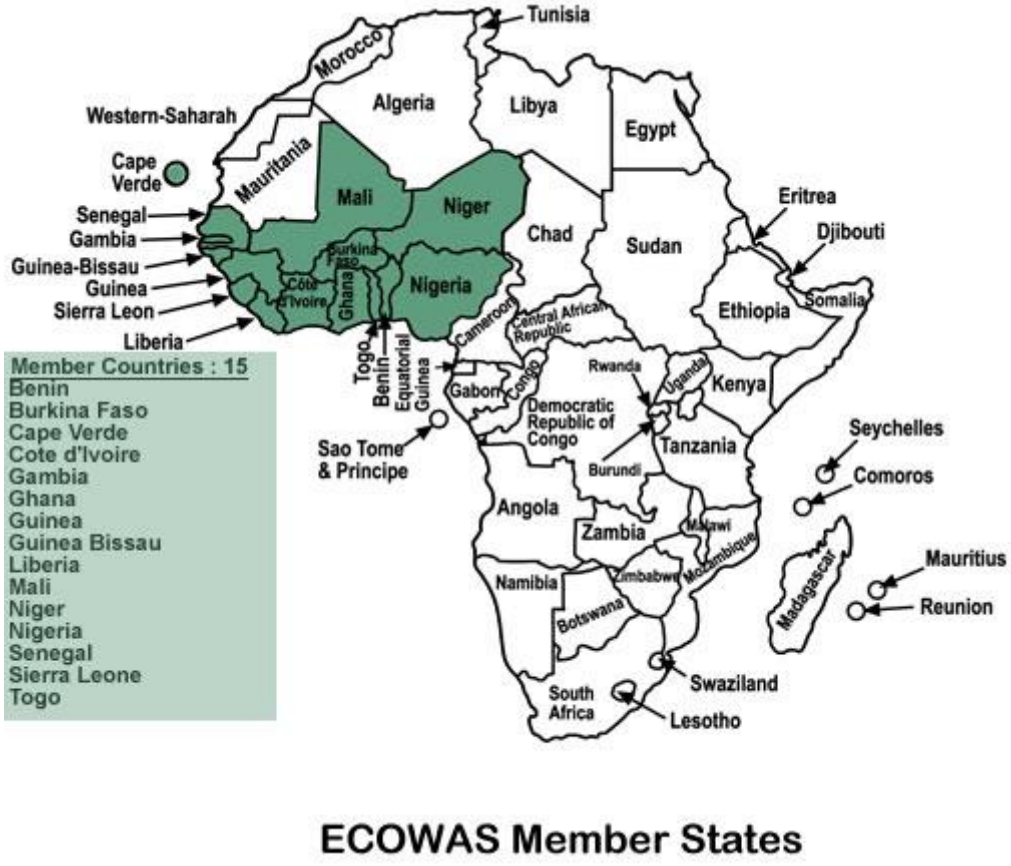
The process of monetary and financial integration began in 1975 with the establishment of West Africa Clearing House (later transformed to West African Monetary Agency, WAMA) in Freetown (Lovegrove et al., 2007). This was followed with the launch of the Monetary Cooperation Program in 1987 by the ECOWAS Commission. The Monetary Cooperation Program defined the roadmap to the formation of monetary union and the adoption of a single currency in ECOWAS (Lovegrove et al., 2007). The leaders in ECOWAS "believe that full financial integration can only be achieved after economic integration is assured" (Lovegrove et al., 2007, pg63).

Two sub-regions defined in terms of language (Anglophone - WAMZ and Francophone - WAEMU) were formed and formalized in 2000. They were created when it was confirmed that ECOWAS would be unable to proceed with the establishment of a single currency soon (Lovegrove et al., 2007). The most recent progress by ECOWAS towards RFI started in April 2000, with West African Monetary Zone (WAMZ) a five-member[33] subdivision of ECOWAS announcing its intentions to adopt a common currency, although it is still yet to be adopted. *The Union Economique et Monétaire Ouest-Africaine* (UEMOA) interpreted in English as West African Economic and Monetary Union (WAEMU) consist of eight[34] ECOWAS

[33] WAMZ consist of Gambia, Ghana, Guinea, Nigeria and Sierra Leone.
[34] These countries are Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo.

countries that already have the same currency (the CFA franc). Two[35] ECOWAS member countries do not belong to any of the subdivisions.

**Figure 16: Map Showing Member countries of ECOWAS**




Source: UNECA website

WAEMU is believed to have made substantial progress towards financial integration than other regions in Africa especially in the aspect of harmonizing rules. In 1990, Commission Banciare de l'UMOAs a single banking commission was formed to reinforce banking supervision, and all member states have the same legislations. The supervisory institutions include BCEAO - Banque Centrale des États de l'Afrique de l'Ouest (Central Bank of West African States), Banking Commission, Regional Council for Public Saving and Financial Markets (CREPMF), Inter-African Conference on Insurance Markets (CIMA), and Inter-African Conference on Social Security (CIPRES). BRVM - Bourse Régionale des Valeurs Mobilières is the regional stock exchange of the WAEMU region was founded in 1998 and is located in Abidjan. Presently, various initiatives are being taken to adopt a regional supervisory approach in WAEMU.

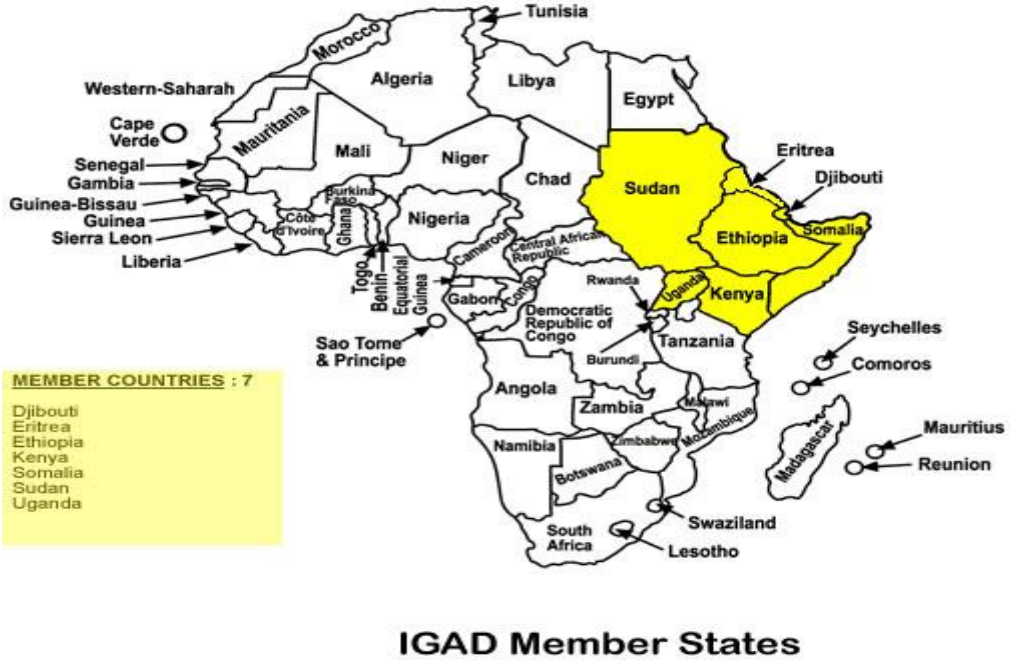
[35] Liberia plans to join WAMZ later while Cape Verde Islands will join only after the two blocs have come together.

Unlike, the WAEMU region the banking systems in WAMZ are not well integrated. Each member country in the WAMZ has its own banking system with Nigeria having the strongest and largest banks in this region. According to Ajayi (2005), the prospective success of WAMZ is dependent on financial and economic integration via trade agreements and single currency adoption. The two subdivisions are at various stages in the RFI process, the WAEMU region has established a monetary union while it can be said that WAMZ is in stage 3 and making some progress towards stage 4.

### 3.2.2.6 The Intergovernmental Authority on Development (IGAD)

The Intergovernmental Authority on Development (IGAD) in Eastern Africa was formed in 1996 and was established to represent the northern sector of COMESA. IGAD primary activities focus on peace and security issues. Much of IGAD's attention has been focused on restoring peace in Somalia and Sudan and in 2007 it also addressed the tension between Ethiopia and Eritrea.

**Figure 17: Map Showing Member countries of IGAD**




Source: UNECA website.

Regarding financial integration IGAD has made no progress. It hasn't met the pre-conditions for establishing an integrated financial system and is still operating at the level of harmonizing macroeconomic policies amongst its members. All members of IGAD except Somalia are members of COMESA and only three belong to the COMESAs FTA—Djibouti, Kenya, and Sudan.

### 3.2.2.7 The Southern African Development Community (SADC)

Established in 1992, the Southern African Development Community (SADC) comprises of 15 member states[36]. One of the biggest challenges faced by the SADC region is the overlapping membership of its member states. Six[37] of SADC members belong to COMESA. One[38] country is a member of the Economic Community of Central African States (ECCAS) while two[39] are in the Indian Ocean Commission (IOC). Five[40] countries constitute the Southern African Customs Union (SACU) while four of them (excluding Botswana) are in a Common Monetary Area (CMA) where the South African Rand is used freely and trades one-to-one with the local currencies (ADB, 2011).

**Figure 18: Map Showing Member countries of SADC**


Source: sadcreview.com

The SADC has taken some steps towards financial integration in the region, and the level of financial integration is highest in the CMA. The underdeveloped and shallow nature of the financial markets of member states except South Africa is preventing the region from making substantial progress towards RFI. The central bank Governors of the 15 member states of SADC created an independent committee of Governors aimed at promoting financial

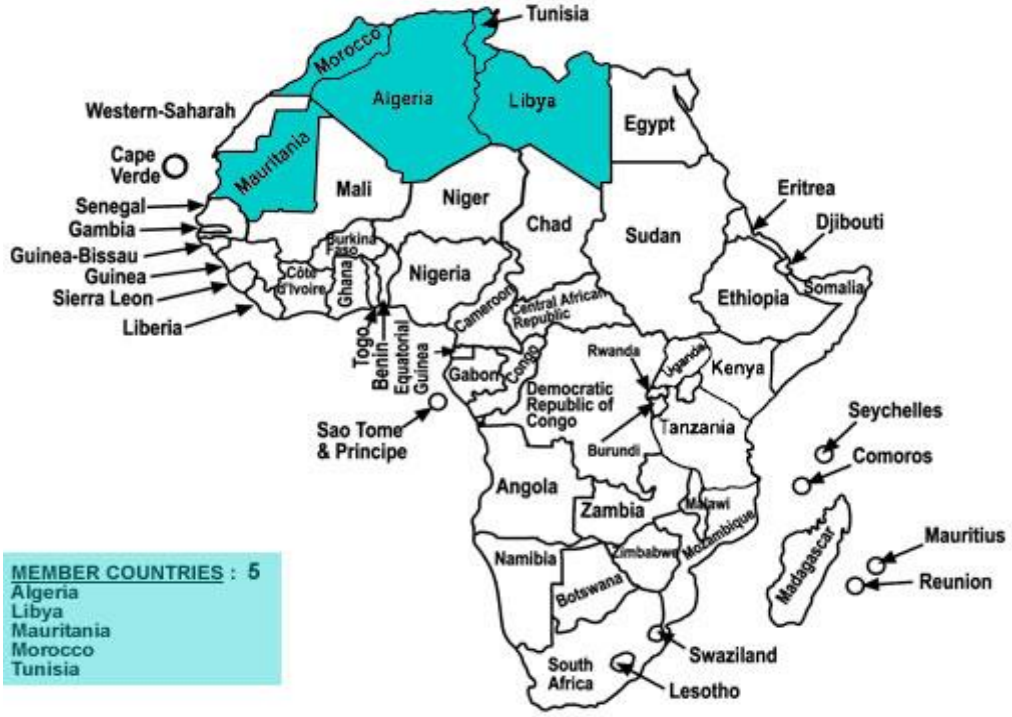
[36] Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.
[37] Madagascar, Malawi, Mauritius, Seychelles, Zambia and Zimbabwe.
[38] Angola.
[39] Mauritius and Madagascar.
[40] Botswana, Lesotho, Namibia, South Africa, Swaziland.

cooperation within the region. Also, within the stock markets in SADC, a committee of stock exchanges was formed. It seeks to achieve a developed and integrated real-time network of securities markets and also harmonize listing rules within the region.

One of the SADCs significant achievements towards RFI is the establishment of "The Southern African Development Community (SADC) Integrated Regional Electronic Settlement System" (SIRESS). It is an electronic payment system, replacing paper-based systems such as cheques and bank drafts. It settles regional transactions among banks within the SADC countries on a gross basis and in real time. Other achievements include: harmonization of exchange control (Botswana, Mauritius, and Zambia), enhanced cooperation amongst central banks, bank regulators, and supervisors, and the establishment of a sub-committee to promote cooperation amongst private sector banking institutions in the region.

### 3.2.2.8 Arab Maghreb Union (AMU)

**Figure 19: Map Showing Member countries of AMU**




**UMA Member States**

Source: UNECA website.

The Arab Maghreb Union (AMU) was established February 17, 1989. Since its establishment, it has not made much progress towards an integrated financial system. It faces some serious challenges which include: ensuring a sound banking system, strengthening competition in

banking, deepening financial markets, strengthening financial sector oversight, and upgrading financial sector infrastructure. AMU is yet to fulfil the preconditions for establishing an integrated financial system.

In sum, presently, there are three regions currently operating monetary unions with a single currency in Africa. They are: Common Monetary Area (CMA) made up of four[41] members, Economic and Monetary Community of Central Africa (CEMAC) with six[42] members and West African Economic and Monetary Union (WAEMU) with eight[43] members. East Africa Community (EAC) and West African Monetary Zone (WAMZ) are currently pursuing the agenda of establishing a single currency and central bank. However, one may ask if these RECs have achieved the preconditions for the formation of monetary and are well integrated financially for the establishment of single currencies and central banks?

Table 17 below provides a summary of the key integration stages and proposed time frame by the African Union. Inferring from table 16, a financial system can be said to be integrated when custom unions are fully effective (i.e. stage 4). From table 16 EAC seems to be the only region that has established a customs union, COMESA has launched one, ECCAS, ECOWAS and SADC are still in the process of launching one, while AMU, CENSAD and IGAD have made no progress towards the establishments of custom unions. The review analysis of the progress of Africa's RECs shows that EAC seems to be making the most progress towards achieving an integrated financial system. ECOWAS and SADC can be ranked to have reached the third stage of financial integration while COMESA is making progress towards the second stage. AMU, CENSAD, ECCAS, and IGAD are still lagging behind and are yet to fulfil the pre-conditions for RFI. This analysis shows that no region has been able to fully achieve all the measures of integration (4$^{th}$ stage), therefore, they should not be pursuing the agenda of monetary union formation and single currency adoption.

[41] Lesotho, Namibia, South Africa, and Swaziland
[42] Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea, and Gabon
[43] Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo

**Table 17: Status of Implementation of integration agenda per RECs**

| Stages | Time frame | AMU | CEN-SAD | COMESA | EAC | ECCAS | ECOWAS | IGAD | SADC |
|---|---|---|---|---|---|---|---|---|---|
| Free trade Areas | 2017 | No progress | In progress | Established | Established | Launched | Established | In-progress | Launched |
| Custom Union | 2019 | No progress | No progress | Launched | Established | In progress | In progress | No progress | In progress |
| Common Market | 2023 | No progress | No progress | No progress | Established | No progress | No progress | No progress | No progress |
| Monetary Union | 2028 | No progress | No progress | No progress | In progress | *CEMAC | In progress | No progress | In progress |
| | | | | | | | *WAEMU | | *CMA |

Source: UNECA 2008[44]

This study proceeds to provide empirical evidence on the level of RFI in Africa's RECs. The study focuses on the four regions that have recorded some level of progress towards RFI (i.e. COMESA, EAC, ECOWAS, and SADC). Empirically measure the level of RFI in Africa's RECs by measuring the degree and speed of financial integration in Africa's RECs to ascertain their progress towards monetary union formation.

[44] The fifth edition of the Status of Integration in Africa released in June 2014 shows that the progress of Africa's RECs still remains the same.

## 3.3 Literature Review

### 3.3.1 The Potential Cost and Contribution of Regional Financial Integration in Africa

#### 3.3.1.1 Theoretical Literature

Mougani (2014, pg.3), defines regional financial integration as "a process aimed at broadening and deepening financial systems within a region via the markets or institutions and establishing integrated financial systems". The process of integrating the financial system involves a significant decline or complete elimination of various barriers in any form such as fiscal, infrastructural, legal and regulatory. The removal of these barriers would expedite free movement of transactions between various financial markets (UNECA, 2008). "RFI implies increasing capital flows and the tendency for the prices and returns on traded financial assets in member states of integrated region to equalize on a common denominator basis" (ADB, 2010, pg30).

According to Lovegrove et al., (2007) regional financial integration benefits results from the combination of various reforms undertaken on different levels. The first level of reform is at the national level. At this level, countries achieve first level benefits as a result of operating domestic markets that become better regulated, better governed, and managed. This increases the competiveness and efficiency of the financial markets (Lovegrove et al., 2007). The merging of financial institutions, markets, and infrastructure across the region leads to the second level benefit. However, it should be strongly emphasized that the benefits from regional financial integration cannot be secured in isolation from the national level reforms required to permit progress on the integration agenda. Moreover, the benefits of regional financial integration increase as a group of countries move towards full integration (i.e. a common market in financial services). That is to say the benefits are not likely to be linear; early reforms will lead to institutional scale economies, but only with a critical mass of policy reforms in place will the greatest benefits of scale be able to be realized (Lovegrove et al., 2007).

It is important to note that the order of reforms is a determining factor on how countries are able to benefit from regional financial integration. The benefits derived from regional financial integration are most likely to accrue over time, rather than having a spontaneous impact on the financial system (Lovegrove et al., 2007). The implementation of the second level reform would typically result in benefiting the economy at the onset. For example, the merging or expansion of financial intermediaries and markets eliminates duplication of capital

requirements, redundancies in management and boards, as well as back office procedures (Lovegrove et al., 2007). Also, compliance cost is reduced as a result of the emergence of a single set of rules and reporting requirement for financial intermediaries and markets operating in several countries within a region. Competitiveness amongst financial intermediaries and markets also increases as they are allowed to offer services in other bloc countries. This will create downward pricing pressure on spreads and fees. Additionally, the increase in competition caused by an increase in the number of financial institutions in the market encourages providers to "go down-market" in search of new, as yet under-served, customers, thus increasing access to financial services and further contributing to growth (Lovegrove et al., 2007).

Regional financial integration should lead to an increase in intra-regional trade, both in goods and financial services. This results from the elimination of barriers and the reduction in payment cost. This is because the process of regional financial integration includes the introduction of a common currency, therefore, cross-border transaction costs (foreign currency conversion and transfer charges) should fall significantly (Lovegrove et al., 2007). The operation of regional capital and debt markets is enhanced by lower currency conversion costs and the elimination of foreign exchange risk. In addition, the cost and quality of regulation is improved as a result of eliminating the duplication of regulatory structures, which are caused by the need to meet the requirements and staffing needs of multiple regulators. Therefore, greater competition, plus the induced institutional efficiencies, should lower the cost of financial transactions in general and cross-border payments in particular (Lovegrove et al., 2007).

However, while countries would substantially benefit from regional financial integration, the process of integration is by no means an easy one. The process of regional financial integration also comes with various cost and difficulties that countries seeking to create a single financial space would have to face. Firstly, from the political perspective, there is a loss of sovereignty inherent in all phases of integration as countries cede elements of decision-making, including control over financial policy (Lovegrove et al., 2007). This loss in political autonomy also has effect of the economy. This includes the loss of control over aspects of monetary and exchange rate policy and the capital account. The implication of this is that government and central banks would face difficulties in managing shocks to their economies and their countries' external competitiveness (Lovegrove et al., 2007). Also, there is the risk that benefits may not be distributed equally among countries. For example, there is concern among the smaller

countries in ECOWAS that the benefits of integration will primarily accrue to Nigeria, while similar fears are present in the EAC with regard to Kenya, and in the SADC with regard to South Africa. Lastly, there is the risk that unless it is accompanied by increased competition, regional financial integration may result in efficiency gains (and profits) for financial institutions, yet do little to improve access to financial services for the majority of the population (Lovegrove et al., 2007).

Regional financial integration also requires structural change (associated with the upgrading and harmonization of financial infrastructure) and financial deepening to allow the harvesting of economies of scale (Lovegrove et al., 2007). These structural changes are important stimulants for economic growth. Larger markets and higher levels of competiveness will also increase profit and reduce overheads, therefore, promoting investment in outreach by market participants. However, in Africa there have been instances where monetary integration (the adoption of a common currency and harmonization of the main pillars of monetary policy) has not led to the desirable outcomes, the UEMOA countries within ECOWAS constitute a monetary zone where little financial integration has been achieved. Therefore, it is important to underline that monetary integration is not synonymous with financial integration. Much progress can be made towards integrating the financial infrastructure among countries while they are still outside a monetary union, and conversely a monetary union can be established while financial systems remain highly segregated (Lovegrove et al., 2007).

### 3.3.2 Regional Financial Integration and Financial Development in Africa

According to Mishkin (2007) and Rajan and Zingales (2003) one important potential consequence of regional financial integration is the reduction of financial repression (Frey and Volz, 2013). “Financial repression describes a situation where a country’s financial system is poorly developed because powerful politico-economic actors (so-called “incumbents”) prevent further development of the financial system” (Frey and Volz, 2013, pg. 5). The merging and expansion of financial intermediaries and markets can lead to the breakdown of structures characterized by monopolies, government-owned financial institutions or both. This results to more efficient and less costly financial intermediation and, hence, financial development (Baldwin and Forslid, 2000).

In addition, institutional development is stimulated as a result of financial intermediaries merging. Less developed financial institutions would be pressured to improve on their capabilities and efficiency. More developed institutions from countries with higher regulatory

standards may introduce "best practices" (Mishkin, 2007) to the financial sector of the host country, and thus help to implement prudential regulation and improve the stability of the domestic financial sector. Due to their outsider status, they have an interest in minimising information asymmetries which typically represent a more severe problem for foreign financial institutions than for domestic ones. Therefore, international financial institutions have an incentive to enforce accounting standards and regulations (Mishkin, 2007).

As markets become increasingly integrated, numerous additional benefits may also materialize. For example, governments, financial intermediaries, and corporations will be able to access a single regional market with greater depth, liquidity and efficiency. Capital may be better allocated amongst the countries within a region, eliminating imbalances created by national restrictions on capital movements. In addition, larger inflows of foreign (to the region) capital may ensue, as a larger and more liquid regional market may be more attractive to international investors. Regional integration will allow financial institutions to diversify better their geographic and sectoral risks over a wider range of companies and sectors, improving the stability of financial systems. Additionally, there may be improved access to more sophisticated risk-mitigating financial instruments made viable by a larger market. Overall, the impact of integration may be a reduction in the regional average cost of capital and debt, while simultaneously offering opportunities to further reduce risks through diversification, improved market liquidity, and the availability of new investment instruments.

And finally, regional financial integration is viewed as having positive effects on a country's macroeconomic policy. Inadequate economic policies, like unsustainable fiscal policies or a malfunctioning regulatory system, are thought to encourage capital outflows and, consequently, higher domestic interest rates. This creates pressure on policymakers and therefore an incentive for them to implement prudential macroeconomic policies (Obstfeld, 1998; Kose *et al.*, 2007).

### 3.3.3 Measuring Regional Financial Integration

#### 3.3.3.1 Theoretical Literature

In the literature, there are various measures for assessing the level of financial integration. However, Ho (2009) argues that it is difficult to develop a standard measure of financial integration. According to Stavarek et al., (2011) this difficult arises because the various types of financial transactions are numerous, and some countries use elaborate price and quality controls mechanism on these wide varieties of financial transactions. This makes the

measurement of the nature and intensity of cross-country differences an enormous task (Eichengreen, 2001). Kalemli-Ozca et al. (2009) says that based on the assortment of complex asset traded, the measurement of financial integration is not a straightforward process.

According to Baele et al., (2004), a fundamental foundation for developing quantitative financial integration measures is the verification of the validity of the law of one price. They propose a common framework for financial integration measurement. This framework emphases on the nature of existing frictions, it determines if the effect of existing frictions are asymmetric across regions. This can be best done by creating a list of all frictions and barriers to financial integration and examining if they still hold or not. However, practically compiling such list is almost impossible. Instead, Baele et al., (2004) propose the use of equilibrium prices as a tool for measuring the level of financial integration. The equilibrium prices are an appropriate measure because "these prices reflect all information at the disposal of economic agents, including possible frictions and barriers that these agents face" (Baele et al., 2004, pg. 11).

There are three main broad categories of financial integration measurement adopted from the definition of Baele et al., (2004) and based on the law on one price. They are: price-based measurement, news-based measurement and quantity-based measurement. The price-based measures capture differences in prices or returns on assets resulting from the geographical origin of the assets. News-based measures, measure the effects friction or barriers have on information. The effect of frictions on the demand and supply of investment opportunities is quantified by Quantity-based measures.

However, this study focuses on price-based measures of financial integration. The price-based measures capture the validity of the law of one price, which must hold if financial integration is complete and it has a clear-cut interpretation (Stavarek et al., 2011). Price-based measure, measures differences in returns or prices of assets resulting from the geographical location of the assets. Based on this, financial markets are integrated when the law of one price holds (Adam et al., 2002; Baele et al., 2004; Stavarek et al., 2011). In details, a financial market is integrated when assets with similar cash flows and risk command identical return, irrespective of the location of the issuer and asset holder (Adam et al., 2002). Therefore, a financial market is not integrated if homogenous assets have differing prices or generate different returns.

The identification of assets with similar characteristics and generating identical cash flows is an important requirement before financial integration can be measured (Adam et al., 2002).

Otherwise, differences in systematic (or non-diversifiable) risk factors need to be controlled for (Baele et al., 2004). According to the law of one price assets in each RECs with similar risk and generating identical cash flow should trade at the same price. This implies that Africa's RECs are integrated provided "the stochastic discount factor, the rates[45] at which cash flow are discounted, is equal across markets" Baele et al., (2004, pg. 12) given that similar assets are identified or differing risk factors controlled. Therefore, the measurement of financial integration can be done by making a comparison of the prices or return of assets issued in different countries and generating similar cash flows (Adam et al., 2002; Baele et al., 2004; Stavarek et al., 2011). The measurement of financial integration must relate to a specific asset and hence to a specific market (Adam et al., 2002).

Given comparable maturities and other characteristics, interest rates differentials between borrowers of assets with similar risk in different countries directly measures the level of integration (Baele et al., 2004). This is owing to the fact that interest rate differentials accounts for a test of discount rates equality (Baele et al., 2004). Hence, from the above definitions, interest rates of financial assets with same risk characteristics should be equal in a fully integrated markets across countries. This study investigates the level of financial integration in the interbank[46] market due to data availability. The interbank market is a market where banks issue loans to one another for a specified period. In the interbank market, each bank faces identical systematic risk, reflected by liquid asset fluctuations and stochastic investment opportunities (Iori et al., 2006). Therefore, in a fully integrated REC the interest rate on interbank assets should be similar.

Interest rate convergence is the most common measure of credit market integration. As stated earlier financial markets are said to be integrated if homogenous assets command the same return and prices, i.e. price differentials are not persistent. Beta-convergence (β-convergence) proposed by Adam et al., (2002) was adopted from the growth literature as a measure of the speed of convergence. In the growth literature, convergence is measured by regressing the average growth rate of GDP on its initial level and a negative coefficient interpreted as the presence of convergence. Applying this to financial integration measurement, β-convergence evaluates whether the interest rates in various RECs have the tendency to converge towards the baseline rate (Espinoza et al., 2009) A negative β coefficient indicates the presence of

[45] The rate is the interest rates that banks charge on short-term loans made between banks.
[46] In the interbank market, banks are trading similar asset (short-term loans needed to manage liquidity) and face identical risk.

convergence, i.e. if β=0 there is no convergence. The size of β indicates the speed of convergence in the markets.

Sigma convergence (σ-convergence) is used to measure the degree of financial convergence in each REC. This measure is also adopted from the growth literature where σ-convergence occurs if the cross-sectional distribution of a variable (typically income per capita) decreases over time. Relating to financial integration measurement, σ-convergence occurs if the cross-sectional distribution of interest rates decreases over time. The major advantage of this measure is that unlike correlation, cross-sectional distribution can be calculated at each point in time by taking the standard deviation of interest rates across countries (Baele et al., 2004). According to σ-convergence, the degree of financial integration increases when the cross-sectional standard deviation of interest rates is moving downwards (Adam et al., 2002). Full integration is achieved when the cross-sectional distribution collapses to a single point, and the standard deviation converges to zero (Adam et al., 2002).

It is important to be mindful of the distinction between the two convergence measures: "β-convergence does not imply σ-convergence" (Adam et al., 2002). This is because mean reversion does not infer that there is a decrease in the cross-sectional variance over time (Adam et al., 2002). Therefore, both indicators β-convergence, a measure of the speed of integration and σ-convergence, a measure of the degree of integration are required in assessing the extent of regional financial integration in credit markets Africa's RECs.

#### 3.3.3.2 Empirical Literature

This chapter empirically measures the level of financial integration achieved in Africa. Most of the existing empirical literature on financial integration measurements are on the Euro area and Asia because they were the first markets to implement the concept of financial integration. Very few empirical literatures are on the African region, with the existing ones focusing on one particular region in Africa.

Adam et al., (2002) measured the degree of financial integration for all EU member countries using interest rate convergence. The results obtained show that financial integration in the Euro Area had increased particularly after 1999. However, there were significant differences in the speed and degree of financial integration based on the interest rate measure used. Cabral et al., (2002) assessed the integration of banking services in the euro area. Using wholesale, capital and retail market measures, they found different levels of integration for the various product areas. Espinoza and Kwon (2009) investigated the extent of regional financial integration in

the Caribbean Community (CARICOM). They used equity prices and rigidity of external financing constraint and found CARICOM stock markets not to be well integrated as expected.

Baele et al., (2004) tested whether the speed of convergence in the euro area has increased following the introduction of a single currency between 2003 and 2004. Using four measures of interest rates, each measure showed different changes to dispersion. Espinoza et al., (2010) investigated the extent of regional financial integration in Gulf Cooperation Council (GCC) member countries. They used interest rate convergence and cross-listed stock data. The results obtained showed the presence of financial integration and relatively short-lived interest rate differentials. Relating to the stock market, results obtained showed fairly integrated markets hindered by market liquidity.

Few of the studies on Africa include: Sy (2006) assessed the degree of financial integration in the West African Economic and Monetary Union (WAEMU). The results obtained showed that the degree of financial integration was advanced in the WAEMU region. Kaijage and Nzioka (2012) investigated the extent of financial integration in East Africa focusing on the degree of convergence in the stock markets. Using long-run equilibrium returns of stock markets their findings showed that East Africa's financial markets have achieved some level of financial integration. Yabara (2012) measured the degree of financial integration in the capital markets of East African countries (EAC). Results obtained showed that financial integration is limited in EAC. This is similar to the results obtained by Wang (2010) for EAC. In a recent study by Drummond et al., (2015) on the extent of financial integration in East Africa. The results obtained provided mixed information on the level of integration in the EAC region: beta convergence indicated progress towards financial integration while sigma convergence showed increasing divergence in the Treasury bill and interbank market.

However, the studies on Africa have mainly focused on one particular region and are not able to tell us the progress Africa has made as a whole towards RFI and monetary union formation. This study, therefore assesses the degree and speed of RFI in various regions of Africa and analysis the strategy of monetary union formation.

## 3.4 Methodology and Analytical Framework

### 3.4.1 Definition of Financial Integration – The Model

There are various alternative definitions of regional financial integration in the literature. This study adopts and applies the definition by Baele et al. (2004) to measure the extent of regional financial integration in Africa because it is the definition that best suits the nature of Africa's financial system and most especially the data available.

According to Baele et al. (2004, pg6) "a financial system is fully integrated when all potential market participants with similar relevant characteristics:

1. face a single set of rules when they decide to deal with a given set of financial instruments and/or services in the market,
2. have equal access to the same set of financial instrument and/or services, and
3. are treated equally when they are active in the market."

There are three major characteristics contained in this definition. First, financial integration is not dependent on the structures[47] of the financial system within the regions. This implies that regions with different financial structures before integration could remain the same after integration has taken place. Therefore, the assumption that financial structure convergence results from financial integration cannot be supported (Baele et al., 2004).

Second, after the completion of the financial integration process, frictions in the intermediation process (i.e. the process of investing or accessing capital via markets or institutions) can persist. This definition emphasizes the focus of financial integration to be the symmetric and asymmetric effect of frictions on different areas rather than the removal of frictions. This implies that financial integration can still take place in the presence of friction as long as the effect of the friction is symmetrical. However, financial integration cannot be complete, if the frictions have asymmetric effects on the market (Baele et al., 2004).

Third, the two elements of a financial market (i.e. the supply of and the demand for investments opportunities) are separated. A fully integrated system ensures that both investors (demand) and firms (supply) have the same access to all financial services irrespective of their origin. Also, full integration ensures that comparable market participants are not discriminated after

[47] "Financial structures encompass all financial intermediaries – institutions and markets- and how they relate to each other with respects to the flow of funds to and from households, governments and corporations" (Baele et al., 2004, pg6).

access to financial services has been granted (Baele et al., 2004). This definition of financial integration is closely related to the law of one price (the most accepted definition of financial integration by most researchers). The law of one price states that irrespective of the location of the asset holder, the return of assets with identical cash flow and risk should be the same.

### 3.4.2 The Methods

#### 3.4.2.1 Beta Convergence

As stated earlier, two measures of interest rate convergence have been used in the assessment of financial integration. The first measure of financial integration is Beta (β-convergence) that draws on the empirical growth literature and evaluates whether Africa's RECs interest rates have a tendency to converge towards the baseline rate. It measures the speed at which interest rate converge to a specific benchmark. This measure involves using panel data to regress:

$$\Delta S_{it} = \propto_i + \beta S_{it-1} + \sum_{I=1}^{L} \gamma i \Delta S_{it-1} + \epsilon_i \qquad (5)$$

Where $S_{it}$ represents a spread of yields on a 3-month interbank interest rate between country $i$ and a benchmark market at time t, $\Delta S_{it}$ is the change in the spread of the 3-month interbank interest rate and $l$ represents lag. The spread should be zero if financial markets are perfectly integrated, because following the law of one price ("mean reversion") assets traded have the same risks and maturity structures (Espinoza et al., 2010). Therefore, a negative β coefficient indicates that convergence is taking place across the markets, and an absolute value of β represents the speed of convergence at which the spread is dissolved and returns on investment on assets in country $i$ converge with those in the benchmark country. $\gamma i$ measures lagging effects from $\Delta S_{it}$, in previous periods.

In this analysis, the benchmark country is assumed to be Nigeria for ECOWAS, Egypt for COMESA, Kenya for EAC and South Africa for SADC given their dominant size and development in the region (following studies such as Alfaro et al. (2004); Baele et al. (2004); Espinoza, et al. (2010). The following countries are excluded from the various region due to unavailability of data, Zimbabwe from SADC, Burundi, Djibouti, Eritrea, Ethiopia, Libya, Rwanda and Zimbabwe from COMESA and Burundi from EAC. Thus, this study focuses on the spreads of returns between the four benchmark countries and the other countries in the region, therefore, the benchmark countries are omitted from the regressions.

### 3.4.2.2 Sigma Convergence

The second indicator of financial integration used is sigma (σ) convergence. It employs the cross-sectional standard deviation of yields across countries at each time, calculated as follows:

$$\sigma_{it} = \left[\frac{1}{n-1}\sum(R_{it} - R_i)^2\right] \qquad (6)$$

Where $\sigma_{it}$ is the cross-sectional standard deviation of the 3-months interbank interest rates in period t. n represents number of countries, $R_{it}$ represents a return on a portfolio investment in country $i$ at time $t$, and $R_t$ identifies an average return in the region at time $t$. The regression of Sigma on a time trend tells us whether and at what pace the dispersion is decreasing and thus whether financial integration is deepening over time. Perfect convergence is realized when the Sigma stays at zero. Beta and Sigma convergence capture different aspects of financial integration: while beta convergence measures to what extent integration has been achieved in a fixed time framework, sigma convergence illustrates whether markets are moving toward integration over time. Beta convergence is a necessary, but not a sufficient condition for sigma convergence Sala-i-Martin (1996): beta convergence could be associated with Sigma divergence.

An extensive variety of empirical studies exists that use these concepts, especially in the context of capital market integration in the European Union (EU). Adam et al., (2002) apply these indicators to 10-year bond yields and interbank rates, as well as mortgage rates and corporate loans rates of the EU countries, concluding that EU financial integration has increased, particularly after 1999. Babetskii et al., (2008) use these indicators to assess stock market integration of the new EU member states such as Czech Republic and Hungary, and find positive evidence. For other regions, Espinoza, et al., (2010) measure interest rate convergence in the Gulf Cooperation Council (GCC) interbank markets and conclude that there is evidence of integration, although little progress has been made since 2000.

### 3.4.2 Data

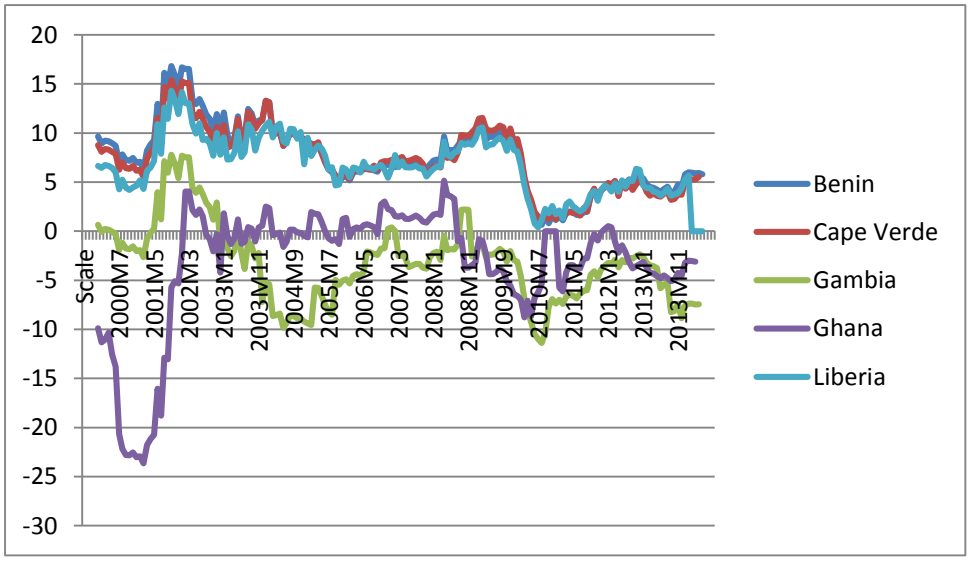
To assess the progress and success made this section uses empirical analysis to investigate the degree and speed of financial integration in these regions through an analysis of interest rate

convergence[48]. From the results further analysis is conducted to ascertain if Africa RECs are perfectly integrated for the establishment of monetary unions.

To analysis interest rate convergence, due to data availability we use three-month interbank rates in local currency for each country listed in the four RECs studied (COMESA, EAC, ECOWAS, and SADC), sourced from the International Monetary Fund database (IMF) monthly statistical bulletin. Monthly data spanning 2000–2014 (2000M1 to 2014M4) are used to estimate both beta and sigma-convergence. The country with the biggest economy is used as the benchmark because it is assumed that they would have the "best performing interest rates" given the nature of their economy

Some of the advantages of using measures based on interest rate differentials are: (i) the data is readily available and easy to compute, (ii) they are constructed using sound statistical measures and are therefore reliable, and (iii) they are informative and easily benchmarked to theoretical values. It is easy to infer that a β-convergence of zero implies absence of financial integration and a zero σ-convergence implies perfect financial integration is achieved (Adam et al., 2002).

**Figure 20: Interest Rate spreads of selected ECOWAS countries**



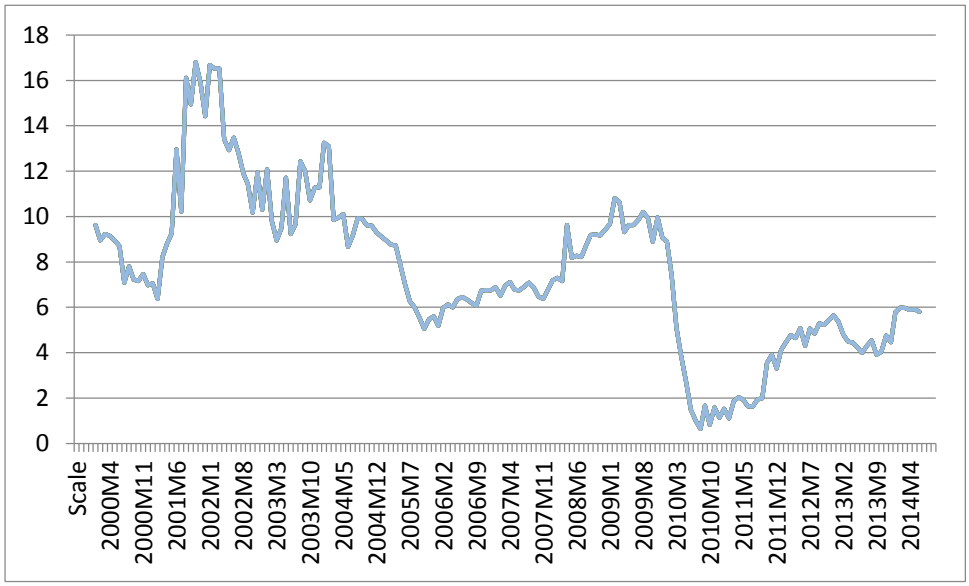

Source: Author's calculation using data from IMF database

Figures 20 to 25 show the interest rate spreads of the RECs used in this study. Figure 20 reports the spread of selected ECOWAS member states. Ghana and Gambia have the lowest and negative spreads, with Benin, Cape-Verde and Liberia having positive spreads and almost

[48] The assumption is that the interest rate is rates on interbank loans. Interbank loans are assets with similar characteristics, identical risk, and generate identical cash flows. Therefore, the risk associated with cash flow differences are controlled for.

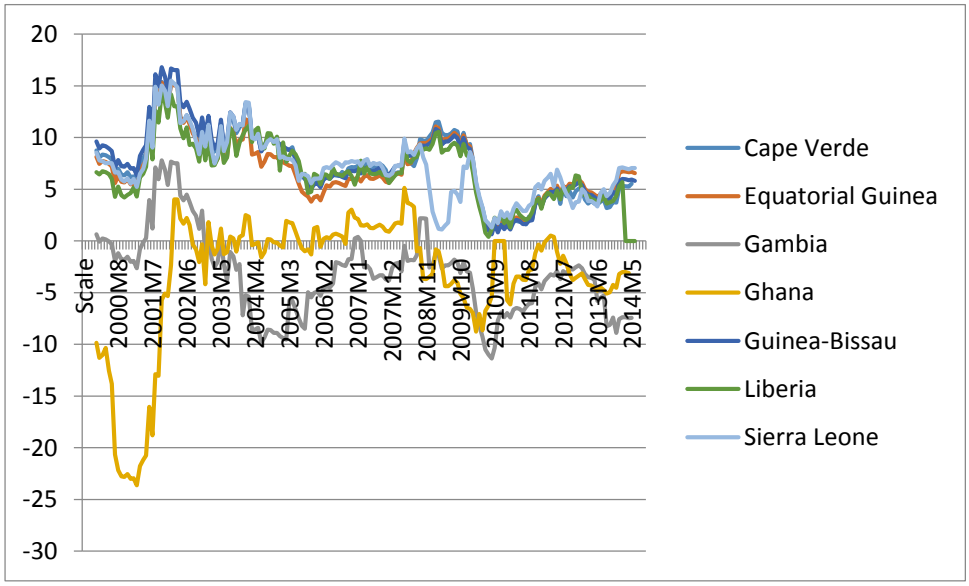
trying to converge at a point. When we further regroup ECOWAS (Nigeria is the benchmark) into its sub-divisions (Figure 21 and 22), figure 21 reports WAEMU member states have the same spread against the benchmark (Nigeria) which implies the same interest rate and therefore spread is zero within the WAEMU region but not with the ECOWAS region as a whole. Figure 22 reports the spread of the WAMZ sub region. Ghana and Gambia have the lowest and negative spread, other countries have positive spread and in 2010 they almost achieve a single spread figure.

**Figure 21: WAEMU: Interest Rate Spreads**




Source: Author's calculation using data from IMF database

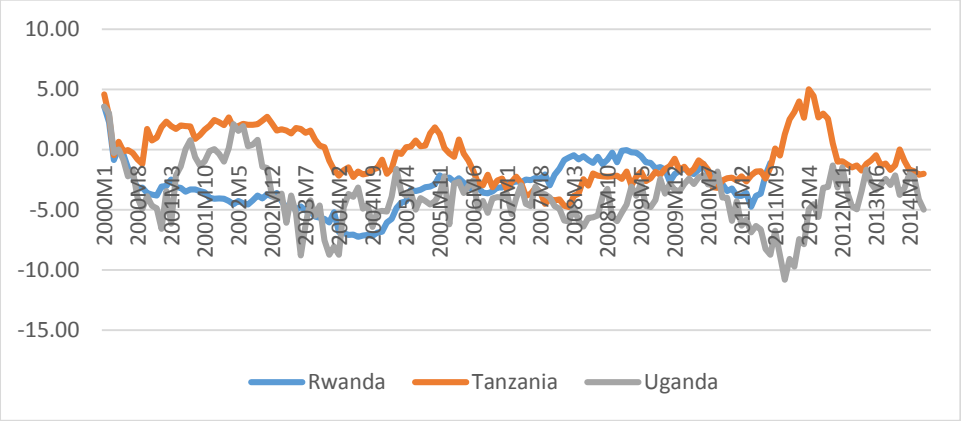
**Figure 22: WAMZ: Interest Rate Spreads**




Source: Author's calculation using data from IMF database

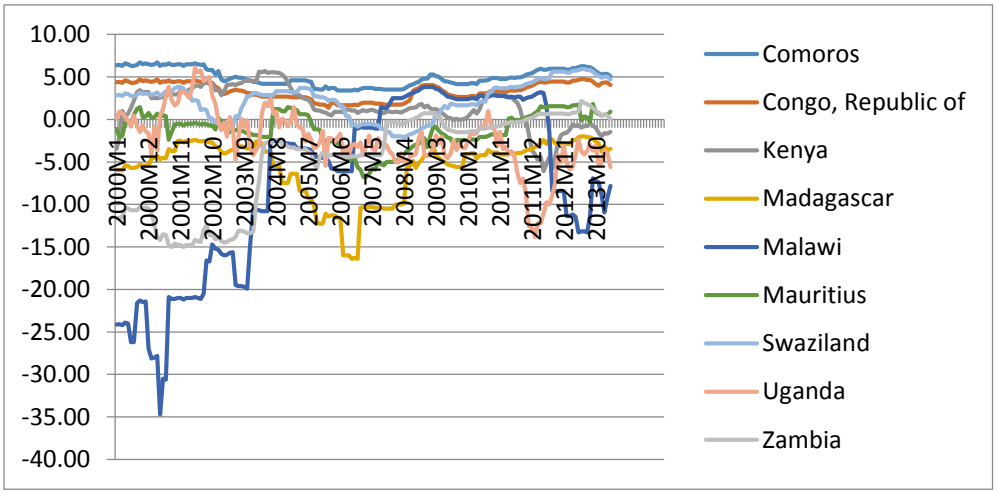
Figure 23 reports the spread of EAC[49] member states. It shows how divergent the interest rates of the individual countries are from benchmark country Kenya. This is similar to the spread of COMESA[50] reported in Figure 24. The disparity in the spread of SADC members is more pronounced for Angola, Zambia, and Madagascar.

**Figure 23: Interest rate spread of selected EAC countries**




Source: Author's calculation using data from IMF database

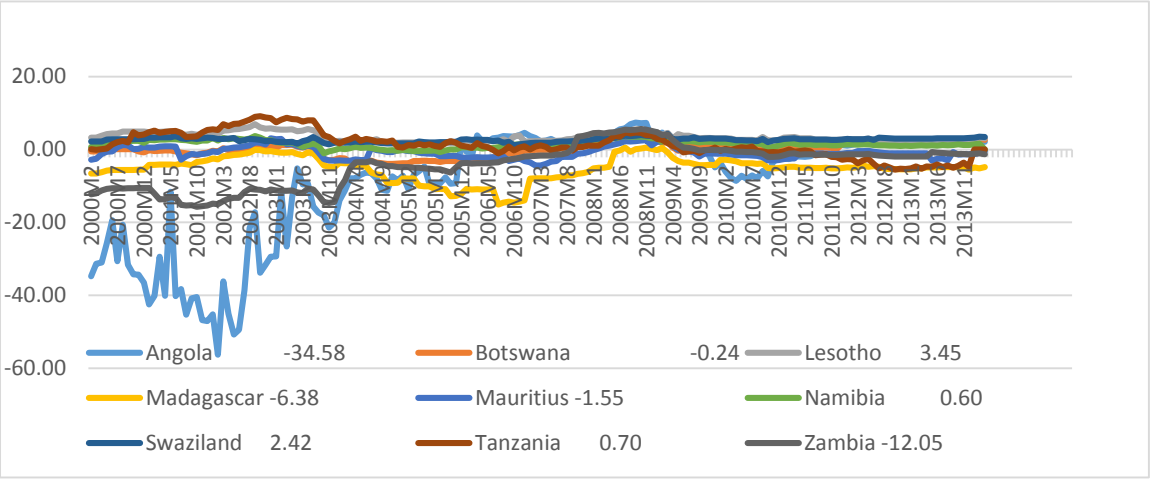
**Figure 24: Interest rate spread of selected COMESA countries**




Source: Author's calculation using data from IMF database

[49] Burundi is excluded due to non-availability of Data. Data on Rwanda is only available to 2011
[50] Benchmark is Egypt

**Figure 25: Interest rate spread of selected SADC countries**




Source: Author's calculation using data from IMF database

## 3.5. Empirical Results

### 3.5.1 Beta Convergence

#### 3.5.1.1 ECOWAS Results

Table 18 shows the estimated beta convergence for the ECOWAS region using the panel data with ordinary least squares, fixed effect, and random effect estimation methods. The 3-month interbank rate for Nigeria is used as the benchmark. The coefficients are statistically significant and robust to estimation method. The Hausman specification test indicates that fixed effect is the most appropriate estimation technique for the ECOWAS region.

**Table 18: ECOWAS: Beta Convergence in Interbank Market – Pooled regression**

| Variables | (1)<br>OLS | (2)<br>Fixed Effects | (3)<br>Random Effects |
|---|---|---|---|
| $Spread_{t-1}$ | -0.030***<br>(0.0060) | -0.062***<br>(0.0062) | -0.030***<br>(0.0042) |
| $\Delta Spread_{t-1}$ | -0.237***<br>(0.0267) | -0.202***<br>(0.0202) | -0.237***<br>(0.0203) |
| $\Delta Spread_{t-2}$ | 0.112***<br>(0.0318) | 0.124***<br>(0.0206) | 0. 111***<br>(0.0207) |
| $\Delta Spread_{t-3}$ | 0.105***<br>(0.0273) | 0.121***<br>(0.0207) | 0. 105***<br>(0.0208) |
| $\Delta Spread_{t-4}$ | 0.141***<br>(0.0307) | 0.162***<br>(0.0208) | 0. 141***<br>(0.0208) |
| $\Delta Spread_{t-5}$ | 0.193***<br>(0.0246) | 0.210***<br>(0.0203) | 0. 193***<br>(0.0203) |
| Observations | 2334 | 2334 | 2334 |
| R-squared | 0.1328 | 0.1201 | 0.1328 |
| Hausman Test | | 0.000 | |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively.

The negative coefficient of lagged spread indicates the presence of financial integration in the ECOWAS region. The speed of convergence is approximately 6% in the ECOWAS region and

the result also indicates that it takes almost eleven months (10.8 months) before the magnitude of deviation is reduced by half. Half-life[51] is calculated as ln 0.5/ln (1+β).

**Table 19: ECOWAS: Beta Convergence in Bank-Credit Market – Individual regression**

| Variables | (1) Fixed Effects | (2) Half Life | (3) R-squared |
|---|---|---|---|
| Benin-Nigeria | -0.058** (0.0235) | 11.6 | 0.1718 |
| Burkina-Faso-Nigeria | -0.058** (0.0235) | 11.6 | 0.1718 |
| Cape-Verde-Nigeria | -0.068*** (0.0243) | 9.8 | 0.1930 |
| Côte d'Ivoire-Nigeria | -0.058** (0.0235) | 11.6 | 0.1718 |
| Equatorial Guinea - Nigeria | -0.081*** (0.0270) | 8.2 | 0.1815 |
| Gambia-Nigeria | -0.065** (0.0281) | 10.3 | 0.0974 |
| Ghana-Nigeria | -0.061** (0.0291) | 11 | 0.1218 |
| Guinea-Bissau-Nigeria | -0.058** (0.0235) | 11.6 | 0.1718 |
| Liberia-Nigeria | -0.089*** (0.0279) | 7.4 | 0.2251 |
| Mali-Nigeria | -0.058** (0.0235) | 11.6 | 0.1718 |
| Niger-Nigeria | -0.058** (0.0235) | 11.6 | 0.1718 |
| Senegal-Nigeria | -0.058** (0.0235) | 11.6 | 0.1718 |
| Sierra-Leone-Nigeria | -0.053** (0.024) | 12.7 | 0.1411 |
| Togo- Nigeria | -0.058** (0.0235) | 11.6 | 0.1718 |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

[51] Half-life is defined as the period during which the magnitude of a shock becomes half of the initial shock.

Table 19 above shows the results for individual regressions showing individual countries interest rate spread from the benchmark Nigerian market. Liberia has the highest speed of approximately 9% with the benchmark Nigeria. The lowest speed of convergence against the benchmark is recorded by WAEMU member countries and Sierra Leone with the speed of 5.8% and 5.3% respectively. The rate at which individual countries converged range from -0.089 for Liberia (7.4 months half- life) to -0.058 (11.6 months half-life) for WAEMU sub-region members and –0.053 (12.7 months half-life) for Sierra Leone. This shows that averagely countries within the WAMZ sub-region are more integrated with the Nigerian market than those in the WAEMU.

**Table 20: WAMZ: Beta Convergence in Interbank Market – Pooled regression**

| Variables | (1) OLS | (2) Fixed Effects | (3) Random Effects |
|---|---|---|---|
| $Spread_{t-1}$ | -0.028*** | -0.067*** | -0.028*** |
| | (0.0086) | (0.0098) | (0.0064) |
| $\Delta Spread_{t-1}$ | -0.211*** | -0.195*** | -0.211*** |
| | (0.0340) | (0.0312) | (0.0313) |
| $\Delta Spread_{t-2}$ | 0.121** | 0.135*** | 0.121*** |
| | (0.0473) | (0.0317) | (0.0319) |
| $\Delta Spread_{t-3}$ | 0.010** | 0.114*** | 0.010*** |
| | (0.0395) | (0.0319) | (0.0320) |
| $\Delta Spread_{t-4}$ | 0.122** | 0.145*** | 0.122*** |
| | (0.0503) | (0.0320) | (0.0320) |
| $\Delta Spread_{t-5}$ | 0.163*** | 0.184*** | 0.163*** |
| | (0.0355) | (0.0314) | (0.0314) |
| Observations | 990 | 990 | 990 |
| R-squared | 0.1125 | 0.0964 | 0.1125 |
| Hausman Test | | 0.001 | |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

The beta convergence for WAMZ[52] sub-region only is shown in table 20 above. The result shows that the speed of convergence within the WAMZ sub-region is faster than that of ECOWAS as a whole. The speed of convergence is approximately 7% with 9 month half-life.

[52] Cape Verde, Equatorial Guinea, Gambia, Ghana, Liberia, Sierra Leone.

For the WAEMU region, the spread within themselves is zero (using Benin as a benchmark) because they have the same interest rates but the speed of convergence with ECOWAS as a whole is 5.8% with a half-life of 11.6 months. The speed of convergence of WAEMU sub-region with the whole region is at a slower rate.

#### 3.5.1.2 SADC Results

Table 21 reports the result of beta convergence in the SADC region. Beta convergence suggests the tendency for returns to converge across SADC. However, the speed of convergence is much slower than the ECOWAS region. The speed of convergence in SADC is approximately 3%, and it takes almost 2 years (half-life 21 months) before the magnitude of deviation is reduced by half.

**Table 21: SADC: Beta Convergence in Interbank Market – Pooled regression**

| Variables | (1)<br>OLS | (2)<br>Fixed Effects | (3)<br>Random Effects |
|---|---|---|---|
| $Spread_{t-1}$ | -0.025***<br>(0.0048) | -0.032***<br>(0.0059) | -0.025***<br>(0.0048) |
| $\Delta Spread_{t-1}$ | -0.311***<br>(0.0213) | -0.308***<br>(0.0215) | -0.311***<br>(0.0213) |
| $\Delta Spread_{t-2}$ | 0.021<br>(0.0221) | 0.024<br>(0.0222) | 0.021<br>(0.0221) |
| $\Delta Spread_{t-3}$ | -0.063***<br>(0.0220) | -0.061***<br>(0.0222) | -0.063***<br>(0.0220) |
| $\Delta Spread_{t-4}$ | -0.105***<br>(0.2201) | -0.102***<br>(0.0221) | -0.105***<br>(0.2201) |
| $\Delta Spread_{t-5}$ | 0.080***<br>(0.0211) | 0.082***<br>(0.0212) | 0.080***<br>(0.0211) |
| Observations | 2170 | 2170 | 2170 |
| R-squared | 0.1479 | 0.1472 | 0.1479 |
| Hausman Test | | 0.062 | |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

One reason for this slow speed is the overlapping membership of members. As seen in table 22 countries such as Angola, Malawi and Zambia who are members of other RECs do not converge individually with South-Africa. The country with the highest speed of convergence

(approximately 13%) against the benchmark is Mauritius. Botswana has the lowest speed of approximately 3%.

**Table 22: SADC: Beta Convergence in Interbank Market – Individual regression**

| Variables | (1)<br>OLS | (2)<br>Half Life | (3)<br>R-squared |
|---|---|---|---|
| Angola-South Africa | -0.030<br>(0.043) | | 0.2445 |
| Botswana-South Africa | -0.025*<br>(0.0152) | 27.4 | 0.0555 |
| Congo-South Africa | -0.031*<br>(0.0171) | 22 | 0.2139 |
| Lesotho-South Africa | -0.056*<br>(0.0295) | 12 | 0.0761 |
| Madagascar-South Africa | -0.043<br>(0.0365) | | 0.0470 |
| Malawi-South Africa | -0.025<br>(0.017) | | 0.0505 |
| Mauritius-South Africa | -0.125***<br>(0.0441) | 5 | 0.0785 |
| Mozambique-South Africa | -0.051***<br>(0.0183) | 13.2 | 0.2168 |
| Namibia-South Africa | -0.054**<br>(0.0270) | 12.5 | 0.0705 |
| Seychelles-South Africa | -0.082***<br>(0.0313) | 8.1 | 0.2001 |
| Swaziland-South Africa | -0.087*<br>(0.0525) | 7.6 | 0.1238 |
| Tanzania-South Africa | -0.019<br>(0.0174) | | 0.0412 |
| Zambia-South Africa | -0.012<br>(0.0104) | | 0.0327 |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

Table 23 reports the regression results of SADC members without overlapping membership (Botswana, Lesotho and Namibia).

**Table 23: SADC members without overlapping membership: Beta Convergence in Interbank Market – Pooled regression**

| Variables | (1) OLS | (2) Fixed Effects | (3) Random Effects |
|---|---|---|---|
| $Spread_{t-1}$ | -0.036*** | -0.063*** | -0.036*** |
| | (0.0098) | (0.0165) | (0.077) |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

The results show the evident effect of overlapping membership. The speed of integration has increased from 3% to 6% and the half-life from 21 months to 10.6 months. Table 24 shows the result for CMA members (Lesotho, Namibia and Swaziland) only.

**Table 24: CMA: Beta Convergence in Interbank Market – Pooled regression**

| Variables | (1) OLS | (2) Fixed Effects | (3) Random Effects |
|---|---|---|---|
| $Spread_{t-1}$ | -0.036** | -0.059*** | -0.036*** |
| | (0.0015) | (0.0165) | (0.0129) |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

The results for beta convergence for the CMA sub-region shows a significant increase in the speed of convergence compared to SADC as a whole. The speed of convergence increased from 3% to approximately 6%. Also, there is an improvement in half-life from 21 months to 11 months. Table 25 shows the results for SACU members (Botswana, Lesotho, Namibia and Swaziland) only.

**Table 25: SACU: Beta Convergence in Interbank Market – Pooled regression**

| Variables | (1) OLS | (2) Fixed Effects | (3) Random Effects |
|---|---|---|---|
| $Spread_{t-1}$ | -0.023*** | -0.039*** | -0.023*** |
| | (0.0084) | (0.0114) | (0.0080) |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

The result for beta convergence for the SACU sub-region shows a marginal increase in the speed of convergence by 0.7%. The value of the half-life improved to 17.4 months half-life. These results indicate that overlapping membership and sub-division of SADC are some of the factors limiting SADCs progress towards financial integration.

### 3.5.1.3 COMESA Results

**Table 26: COMESA: Beta Convergence in Interbank Market – Pooled regression**

| Variables | (1) OLS | (2) Fixed Effects | (3) Random Effects |
|---|---|---|---|
| $Spread_{t-1}$ | -0.017** | -0.029*** | -0.017*** |
| | (0.0080) | (0.0048) | (0.0033) |
| $\Delta Spread_{t-1}$ | 0.015 | 0.019 | 0.015 |
| | (0.0045) | (0.0232) | (0.0232) |
| $\Delta Spread_{t-2}$ | 0.092** | 0.097*** | 0.092*** |
| | (0.0453) | (0.0233) | (0.0232) |
| $\Delta Spread_{t-3}$ | -0.039 | -0.034 | -0.039 |
| | (0.0556) | (0.0234) | (0.0233) |
| $\Delta Spread_{t-4}$ | -0.005 | 0.0001 | -0.005 |
| | (0.0497) | (0.0232) | (0.0231) |
| $\Delta Spread_{t-5}$ | 0.010 | 0.015 | 0.010 |
| | (0.040) | (0.0232) | (0.0232) |
| Observations | 1835 | 1835 | 1835 |
| R-squared | 0.0239 | 0.0226 | 0.0239 |
| Hausman Test | | 0.0360 | |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively.

Table 26 above reports the result of beta convergence of COMESA. The negative and significant β indicates the presence of convergence and integration in COMESA. The speed of convergence for the COMESA region is only 2.9%, and the half-life for COMESA is 23.5 months approximately 2 years. This shows that speed of convergence is considerably slow in this region.

The results of the individual regression in table 27 shows that most countries do not have significant β, implying the absence of integration between them and the benchmark country. Comoros, Kenya, Mauritius, Swaziland, and Tanzania are the countries with significant and negative β with half-life's ranging from 9.1 months to 27.3 months. Uganda has the highest speed of convergence of 7.3% while Swaziland has the lowest speed of integration.

**Table 27: COMESA: Beta Convergence in Interbank Market – Individual regression**

| Variables | (1) Fixed Effects | (2) Half Life | (3) R-squared |
|---|---|---|---|
| Comoros-Egypt | -0.025* | 27.3 | 0.1040 |
| | (0.0138) | | |
| Congo-Egypt | -0.025 | | 0.0852 |
| | (0.0155) | | |
| Kenya-Egypt | -0.043** | 15.7 | 0.1934 |
| | (0.0207) | | |
| Madagascar-Egypt | -0.033 | | 0.0267 |
| | (0.0389) | | |
| Malawi-Egypt | -0.027 | | 0.0592 |
| | (0.0196) | | |
| Mali-Egypt | -0.015 | | 0.1080 |
| | (0.0104) | | |
| Mauritius-Egypt | -0.041* | 16.5 | 0.0420 |
| | (0.0207) | | |
| Seychelles-Egypt | -0.068 | | 0.1315 |
| | (0.0448) | | |
| Swaziland-Egypt | -0.019** | 36.1 | 0.2586 |
| | (0.0093) | | |
| Uganda-Egypt | -0.073** | 9.1 | 0.0735 |
| | (0.0312) | | |
| | | | 0.2233 |
| Zambia-Egypt | -0.009 | | |
| | (0.0090) | | |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

### 3.5.1.4 EAC Results

Table 28 reports the beta convergence of EAC. The results show the presence of financial integration for all estimation methods used. The speed of convergence of EAC is the fastest amongst the regions studied. The speed of convergence in the EAC is approximately 12% and it has a half-life of 5.6 months. The estimated coefficient is similar to the results obtained by Drummond et al., (2015).

**Table 28: EAC: Beta Convergence in Interbank Market – Pooled regression**

| Variables | (1) OLS | (2) Fixed Effects | (3) Random Effects |
|---|---|---|---|
| $Spread_{t-1}$ | -0.065*** | -0.115*** | -0.065*** |
| | (0.0206) | (0.0228) | (0.0181) |
| $\Delta Spread_{t-1}$ | 0.209*** | 0.188*** | 0.209*** |
| | (0.0631) | (0.0472) | (0.0469) |
| $\Delta Spread_{t-2}$ | 0.015 | 0.031 | 0.015 |
| | (0.0631) | (0.0480) | (0.0480) |
| $\Delta Spread_{t-3}$ | -0.084 | -0.101** | -0.084 |
| | (0.0594) | (0.0480) | (0.0479) |
| $\Delta Spread_{t-4}$ | -0.008 | 0.023 | -0.008 |
| | (0.0592) | (0.0463) | (0.0463) |
| $\Delta Spread_{t-5}$ | 0.046 | 0.056 | 0.046 |
| | (0.040) | (0.0443) | (0.044) |
| Observations | 470 | 470 | 470 |
| R-squared | 0.0912 | 0.0866 | 0.0912 |
| Hausman Test | | 0.0190 | |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively

Table 29 reports the results for individual regression. The results suggest mean diversion taking place for all countries. The speed of convergence is fastest in Uganda (16%) and slowest in Rwanda (approximately 5%), with 3.9 and 15 months half-life respectively. These results imply that the EAC region is making substantial progress towards financial integration.

**Table 29: EAC: Beta Convergence in Interbank Market – Individual regression**

| Variables | (1) Fixed Effects | (2) Half Life | (3) R-squared |
|---|---|---|---|
| Rwanda-Kenya | -0.045** | 15 | 0.1373 |
| | (0.0212) | | |
| Tanzania-Kenya | -0.077*** | 8.6 | 0.0875 |
| | (0.0263) | | |
| Uganda-Kenya | -0.162*** | 3.9 | 0.1535 |
| | (0.0544) | | |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively.

### 3.5.2 Sigma Convergence

Figures 26 to 29 presents the cross-sectional standard deviation of the 3-months interbank interest rates of the four RECs studies. For ECOWAS, figure 26 shows that the dispersion in interest rate begins to decrease after 2000, with a decrease in the standard deviation of inter-bank rates from about 65% to 25%. However, this slowed down and picked up again in 2004. The degree of integration in ECOWAS seems to have been fluctuating between 2009 and 2012 and dispersion measures are becoming relatively less volatile.

For COMESA in figure 27, inter-bank market integration deepened between 2000 and 2004 and dispersion in interest rates remained relatively low, until it began to increase in 2011. SADC shows similar trends as COMESA. Sigma convergence for EAC (figure 29) shows that EAC inter-bank markets have deepened since 2001. The figure suggests a downward trend in dispersion from 2001 till 2010 and then a significant increase between 2011 and 2012. This resulted from high inflation in the region resulting in increasing interest rates. However, after 2012 the dispersion of inter-bank rates fell from about 80% to 2% and has become less volatile.

**Table 30: Sigma Convergence of ECOWAS, COMESA, SADC and EAC**

| Variables | (1) ECOWAS | (2) COMESA | (3) SADC | (4) EAC |
|---|---|---|---|---|
| Time trend of $\sigma_t$ | -0.191*** | -0.425*** | -0.904*** | -0.067***[53] |
| | (0.0047) | (0.0094) | (0.0194) | (0.0058) |
| After Inflation crises | | | | -0.713*** |
| | | | | (0.1558) |
| Constants | 37.554*** | 71.972*** | 128.11*** | 10.336***[54] |
| | | | | 30.883*** |
| Observations | 2436 | 1903 | 2262 | 522 |
| R-square | 0.4042 | 0.5139 | 0.4895 | 0.00085 |

Note: Standard errors in brackets
***, **,* denotes significance levels at 1%, 5% and 10% respectively.

Table 30 shows the result of regressing $\sigma_t$ on a linear time trend, summarizing the time trends arising in figures 26 to 29. ECOWAS, COMESA, and SADC have negative time trend indicating that convergence is taking place. Perfect convergence is achieved when the slope

[53] Sigma convergence before inflation crisis in 2011.
[54] Constant before inflation crisis.

and intercept coefficients are zero. This is not achieved by any of the regions. The dispersion in inter-bank rate is widest in SADC region. For the EAC region, the time trend changed from -0.067 to -0.713. The widening dispersion is due to high inflation in the region, resulting to tighter monetary policy and increased monetary rates by member states. These interventions put in place by member states have had significant effect on the degree of convergence in EAC region.

**Figure 26: Sigma Convergence: ECOWAS**


**Figure 27: Sigma Convergence: SADC**

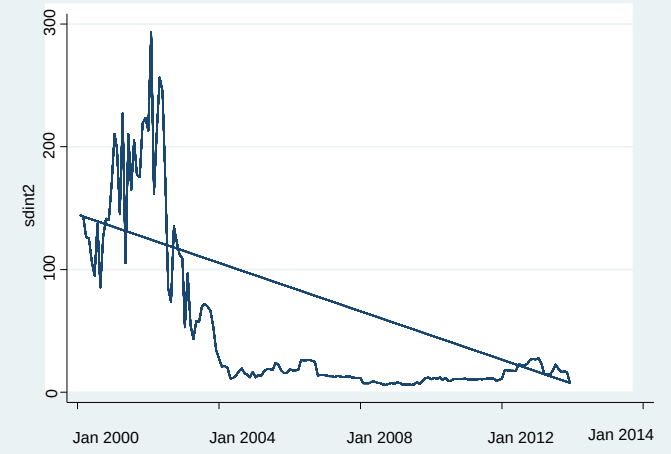



**Figure 28: Sigma Convergence: COMESA**

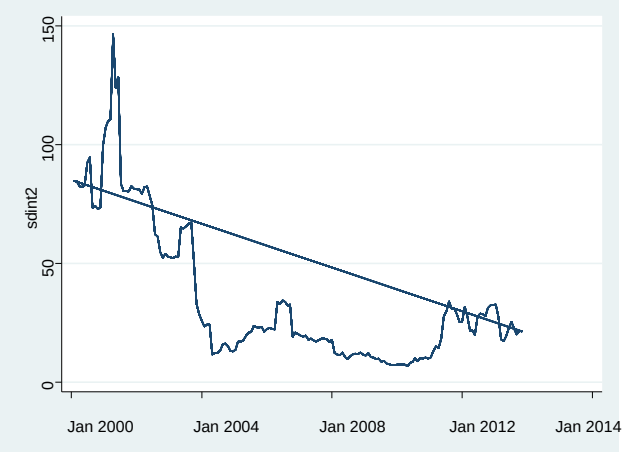
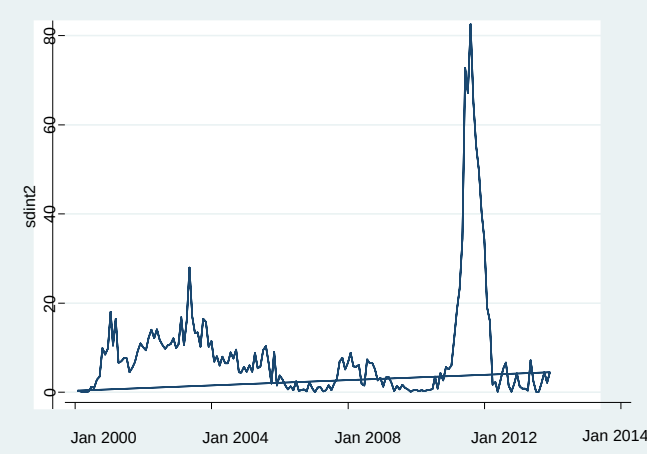



**Figure 29: Sigma Convergence: EAC**



### 3.5.3 Discussion of Results

The results obtained indicates that beta convergence is taking place in all regions and sub-regions. Comparing estimated beta convergence, the speed of convergence of returns is fastest in the EAC region with the speed of approximately 12% and 5.4 months half-life. The rate at which individual countries converge in the EAC region ranges between 4 and 15 months. The ECOWAS region reports a speed of 6.2% (10.8 months half-life), when divided into the sub-regions WAMZ sub-region on its own has a faster speed of approximately 7% (9 months half-life). The WAEMU sub-region is converging with other members of the ECOWAS region at a slower speed of 5.8% (11.6 months half-life) but within itself it has a spread of zero. SADC region comes next with a speed of convergence of 3% and 21 months half-life. When taking into account members with no overlapping member this improves to about 6.3% and 10.6 months half-life. The speed of CMA and SACU sub-regions are approximately 6% and 3% with 11.3 months and 17.4 months half-life respectively. The region with the slowest speed towards financial integration is COMESA with the speed convergence at 2.9% and 23.5 months half-life.

Also, the results for individual regression show that individual countries have mean reversion i.e. different speed of convergence with the benchmark countries. For some regions such as COMESA and SADC no mean reversion exists between some individual countries and the benchmark country, while others are converging at really slow rates. Sigma convergence provides similar results for the degree of financial integration in these regions. SADC and COMESA record the lowest degrees of financial integration. The degree of convergence was highest in the EAC region before the incidence of high inflation rates which resulted in significantly lowering the degree of convergence in the EAC.

### 3.6 Conclusion and Policy Recommendations.

The already existing monetary unions are CEMAC, WAMZ and CMA. EAC and WAEMU are currently pursuing the agenda of single currency and single central bank. However, based on the level of financial integration in these regions, is this agenda realistic? This study shows that from theoretical analysis and empirical evidence the progress made by Africa's RECs towards financial integration is not substantial for the formation of an effective and sustainable monetary union. The four RECs have relatively similar speed and degree of integration with the EU members before the adoption of the Euro as a single currency. Therefore, the Eurozone crisis that has almost led to the collapse of the European monetary integration should be an important case study for Africa's RECs.

The Eurozone is still yet to recover from the sovereign debt crisis and although various causes of the crises have been identified, the adoption of a single currency by countries with fragmented financial systems has been outlined. Several researchers and the ECB have pointed out that the failure of the Eurozone to achieve sustainable and complete financial integration before the adoption of a single currency contributed to the crisis. The Eurozone crisis has also shown the deficiency in the Endogenous OCA criteria adopted in the formation of the European monetary union. Presently, the Eurozone is working towards the establishment of a banking union to improve the quality of financial integration and create sustainable financial integration in the future.

Therefore, it would be beneficial for policy makers to approach the formation of a monetary union and single currency adoption in Africa's RECs with caution. Although the East African Community (EAC) and West African Monetary Zone (WAMZ) has made some remarkable progress towards integration, results obtained show that rising inflation rates in the EAC region, and differing speed and degree of convergence amongst individual countries in the WAMZ region are of significant concern. EAC experienced a significant fall in the degree of convergence and the discovery of oil in Uganda has also contributed to the rising inflation due to oil price volatility.

Member countries of EAC and WAMZ are still undertaking different structural policies and are yet to achieve a fully integrated financial system. From the review of the progress made towards RFI and the road map for RFI, Africa's RECS are yet to meet all the macroeconomic convergence measures outlined. In addition, EAC and WAMZ plan to establish their central banks: East African Central Bank and West African Central Bank just like that of the Eurozone

(ECB). The process of monetary union formation needs to be undertaken with caution, and Africa's RECs must ensure that bailout plans and measures[55] are extensively addressed in their current treaties.

The results from this study suggest that Africa's RECs particularly EAC and WAMZ would be better off forgoing the agenda of monetary union formation while they focus on strengthening financial integration in the region. A well-integrated financial system would promote the long-term sustainability of monetary union by supporting macroeconomic convergence and fiscal policy harmonization in these regions (Mongelli, 2008; Mougani, 2014). Africa's RECs need to focus on the following areas to strengthen financial integration in the various RECs.

One of the major ways to strengthen regional financial integration is to eliminate overlapping membership. The effect of overlapping membership is evident in COMESA and SADC region. These regions will make more progress towards financial integration with fewer members belonging to a single group. African leaders need to work towards restoring peace and stability in the region. Ongoing armed conflicts in countries such as South Sudan and the Central African Republic is detrimental to the efforts towards regional financial integration. These conflicts have contributed to the slow progress made by IGAD and ECCAS towards financial integration in their respective regions.

For the ECOWAS region, in a recent workshop tagged "Regional Integration in Western Africa: Challenges and Opportunities for Senegal" experts recommended axing the CFA franc to strengthen financial integration in West Africa. From the results obtained, it shows an uneven speed of convergence among individual countries. Although WAEMU sub-region has zero spread among them, in terms of converging with the region as a whole they are the slowest. The speed of convergence for the WAMZ sub-region alone is faster than ECOWAS region. ECOWAS would be better-off as "a single region" with WAEMU merging with WAMZ. This would strengthen financial integration in the region.

Although EAC has the fastest speed of convergence, the degree of convergence has revealed the inability of beta convergence mechanism to reduce the dispersion of inter-bank rates across the region. Instead of pursuing the agenda of establishing a monetary union, EAC should focus on converging macroeconomic performance such as inflation and fiscal policies. A higher level of economic convergence would lead to a more integrated financial system in EAC. According

[55] In the event of debt or other fiscal problems.

to Drummond et al., (2015) this can be achieved by enforcing sound national economic policies and conducting regional surveillance.

In sum, based on the results obtained on speed and degree of financial integration in Africa's RECs the agenda of establishing single currencies and central banks should be postponed and handled with caution. Instead, African RECs should focus more on strengthening the existing level of financial integration in their regions. A stronger integrated financial system would make the establishment of a single currency and central bank a more successful process.

# Chapter 4: FINANCE AND FIRM PRODUCTIVITY IN AFRICA: BACKGROUND STUDY FROM WORLD BANK ENTERPRISE SURVEY DATA

## 4.1 Introduction

The growth and competitiveness of Africa's enterprises are important catalysts for increasing rate of growth and development in Africa's economy (Becks et al., 2013). According to African Development Bank Group Report 2015, the informal sector[56] contributes about 55 percent of Sub-Saharan Africa's GDP. Predominantly, small and medium-sized enterprises (SMEs) are commonly recognised as drivers of economic growth, innovation, diversification, regional development, job creation, and contribute to more than 80 percent of output and employment in most African countries (Becks et al., 2013). However, a vast majority of firms in Africa are constrained by several factors such as limited access to stable energy service, skilled labour, business management, and access to finance for investment from both the formal and informal sector (Becks et al., 2013).

This study focuses on the finance constraint and examines the effect of access to internal and external finance[57] on firms' productivity. Although, there are diverse ways through which firms can finance their operations and growth, the choice of a particular method is determined by management preferences and available options (Gatti and Love, 2008). However, the availability of external finance is largely a component exogenous to the firm, determined by the wider institutional environment. The lack of internal finance may suggest that the firm is not profitable or profits have been exhausted on other projects and funds are not available for advancing new projects. The unavailability of finance both internally and externally is a major business obstacle firms' face because firms require more finance to achieve higher levels of productivity and growth (Gatti and Love, 2008; Becks et al., 2013; Chen and Guarigila, 2013). This chapter explores the channels through which finance affects firms' productivity in Africa using cross-country and cross-firm level data from World Bank Enterprise Surveys.

An extensive range of internal and external factors determines the form, source and cost of finance to firms. The ability and expertise of firm managers, structured business plan, and risk analysis are essential internal resources needed for sourcing external financing (Becks and Honohan, 2008). However, the accessibility of external finance mainly depends on conditions

[56] The informal sector is defined as entities whose objective for producing goods and services is the generation of employment and income to the persons concerned.
[57] This study focuses on access to finance from the formal sector given the data available.

outside the control of the firm. The availability of external finance depends mainly on the effectiveness and existence of a range of intermediaries and subsidiary firms that assist in pooling funds providers and users by improving their ability to curb information and agency problems (Tirole, 2010). Firms face further constraints as a result of differing pattern and extent of finance needed by different firms in various countries (Becks and Honohan, 2008). Economists and policy makers place particular interest on the unavailability of external finance resulting from imperfect financial market because they have important implications for monetary policy transmission mechanism and tax policy (Chen, 2010).

According to Siedschlag et al. (2014) access to external finance is an essential factor for promoting investment and innovation which are important elements of firms' productivity. Some of the channels through which improved access to external finance affect firms' productivity and ultimately economic growth according to Beck et al. (2008) are: (i) the availability of external finances increases the number of start-ups – an essential measure of entrepreneurship, innovation, and dynamism of firms (Aghion et al., 2007, Ayyagari et al., 2011), (ii) finance is required by existing firms to allow them benefit from investment and growth opportunities and be able to achieve bigger equilibrium size (Beck et al., 2006b), (iii) for the acquisition of assets portfolio that are more efficient and productive and the choice of efficient forms of organization like incorporation (Demirgüç- Kunt et al., 2006).

Although, relatively ignored in existing literature, the availability of internal finance also affects firms' productivity. Firms experiencing difficulties in accessing external finance have to rely on their own internal finance (Chen and Guariglia, 2013). Particularly, limited access to external finance is usually available for firms in their infancy stage (i.e. start-up phase), thereby restricting them to internal equity capital and bank borrowing (Segarra-Blasco and Teruel, 2009). Access to internal finance helps to improve entry growth, reduces risk, promotes innovation, and increases equilibrium size (Beck et al., 2008). It also enhances the performance of the aggregate economy via stronger financial systems (Chen and Guariglia, 2013). Chen (2010) states that readily available internal funds would facilitate investment in productivity-enhancing projects by innovative firms. The availability of internal funds is essential for the daily operations of the firm and the achievement of long-term development goals and investment opportunities (Kira, 2013).

The contributions of this study are: firstly, it provides an empirical study on the effect of access to finance on firms' productivity in Africa. The review of existing literature shows that empirical analysis of this effect on African countries is almost non-existent. Secondly, while

most existing literature on other countries focuses only on external finance, this study focuses on the links between both internal and external finance and firms' productivity in Africa. Thirdly, this study uses more direct measures of access to finance, such as having a checking or savings account, the presence or absence of overdrafts and lines of credit. Fourthly, several firm-level studies estimate firms' productivity using only the Total Factor Productivity (TFP) model. This study improves on the existing literature by measuring firms' productivity using the TFP model, labour productivity, and the stochastic frontier Cobb-Douglas and translog model. To address potential endogeneity and OLS estimation bias, instrumental variable (GMM) model is used to estimate the TFP model using growth in sales and type of ownership as instruments.

This chapter is structured as follows. Section 4.2 provides an analysis of the composition of finance across firms in Africa. Section 4.3 reviews existing theoretical and empirical literature. Section 4.4 provides details of the econometric methodology used and describes the data in the study. Section 4.5 reports and discusses the findings of the study. While the summary of findings and policy implications are presented in session 4.6.

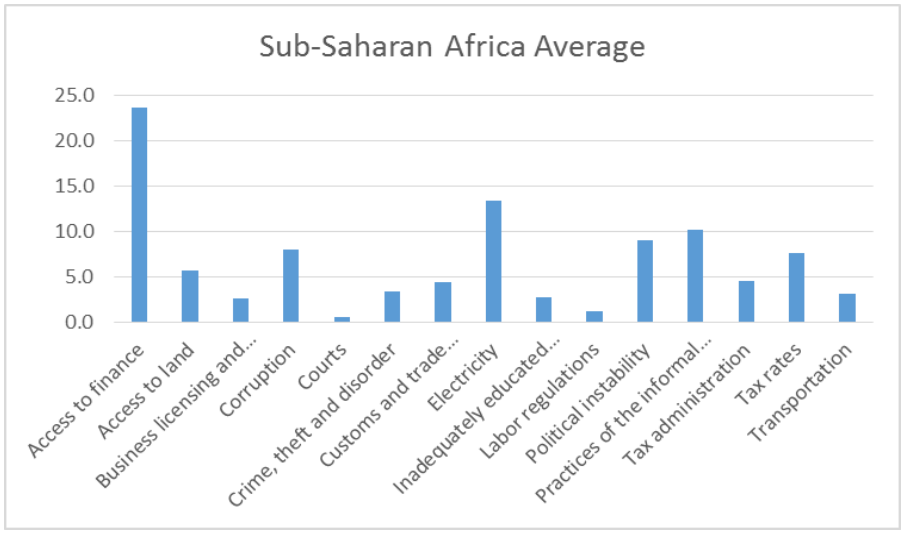
### 4.2 The Composition of Finance across Firms in Africa

It is informative to provide a brief review the sources of finance commonly used by firms in Africa and what type of finance firms have access to in carrying out their operations in evaluating the effect of finance on firm's productivity. These section attempts to answer the following research questions:

1. What types of finance are relevant for, and what composition is used by, firms in Africa?
2. Do firms access to external sources of finance available and how does the access differ across enterprises and industries?

Figure 30 below shows the largest percentage of firms in Africa reported access to finance as the biggest obstacle they faced in their operations. Approximately 25% of firms surveyed in Sub-Saharan reported that access to finance was one of the biggest obstacles they face. This shows that access to finance is an essential element for firms' productivity in Africa.

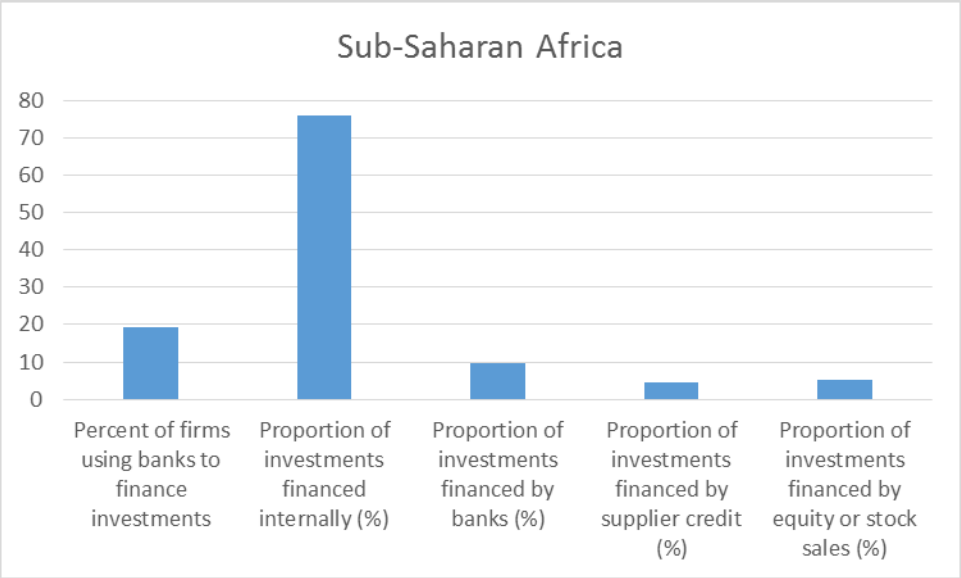
**Figure 30: Biggest Obstacles faced by firms in Sub-Saharan Africa (%)**




Source: World Bank Enterprise Survey (ES)

Figure 31 below shows the proportion of each source of finance used by firms in Sub-Saharan Africa for investment in fixed assets and financing working capital. The figure indicates that internal funds were the most utilised source of finance. Internal funds finance more than 70% of investment projects, a marginal 10% is being funded by banks, while just an average of 5% of investments is financed by supplier credit and equity or stock sales.

**Figure 31: Proportion of Investments Financed by Various Sources of Finance**



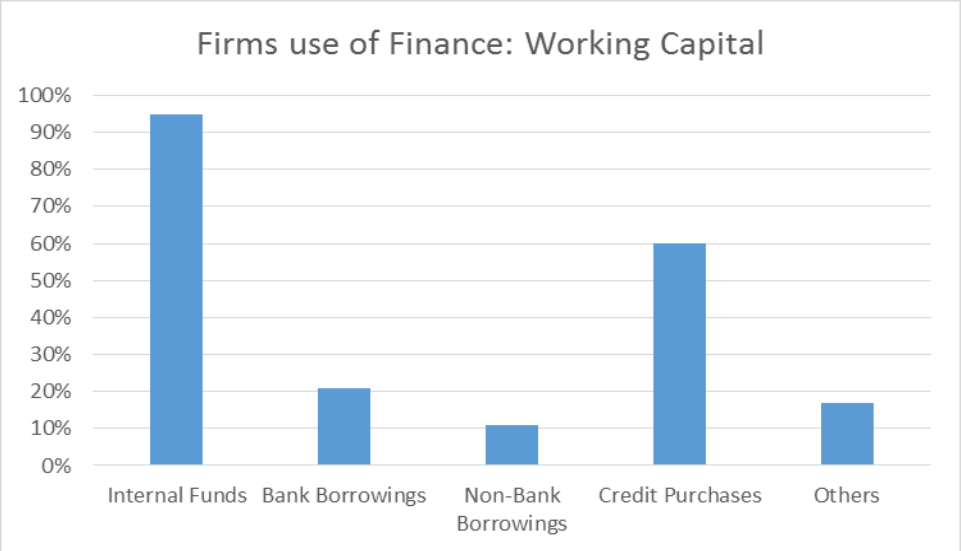

Source: World Bank Enterprise Survey

The data provided by the Enterprise survey are for individual countries. This study focuses on countries that have at least two years' survey data.

### 4.2.1 Usage of Finance Sources

This section provides information on the usage of various sources of finance by firms for working capital and for investment. The survey provides five sources (options) of finance that can be used to finance working capital and investment in fixed assets.

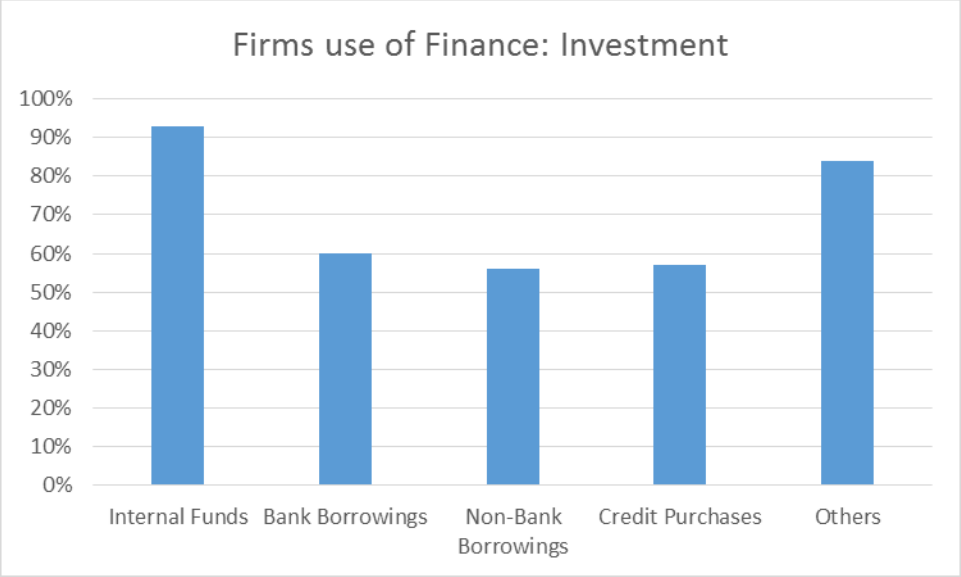
**Figure 32: Percentage of firms using financing for Working Capital**




Source: Author's estimates using ES data

The figure above shows the percentage of firms in this study that used each source of finance for working capital either alone or combined with other sources of finance. Figure 32 shows that 95% of the firms sampled used internal funds to finance working capital. 21% of firms used borrowings from banks, approximately 11% made use of non-banks financing, 60% used credit purchases as a source of finance and 17% used other sources of finance.

**Figure 33: Percentage of firms using financing for Investment**




Source: Author's estimates using ES data

Figure 33 above shows the number of firms in percentages that used each source of finance either alone or combined with other sources to finance investment in fixed assets. Approximately 93% of firms in this sample used internal funds, 84% of firms used other sources of finance, 60% of firms used bank borrowings, 56% and 57% of firms used non-bank borrowings and credit purchases to finance investments in fixed assets respectively.

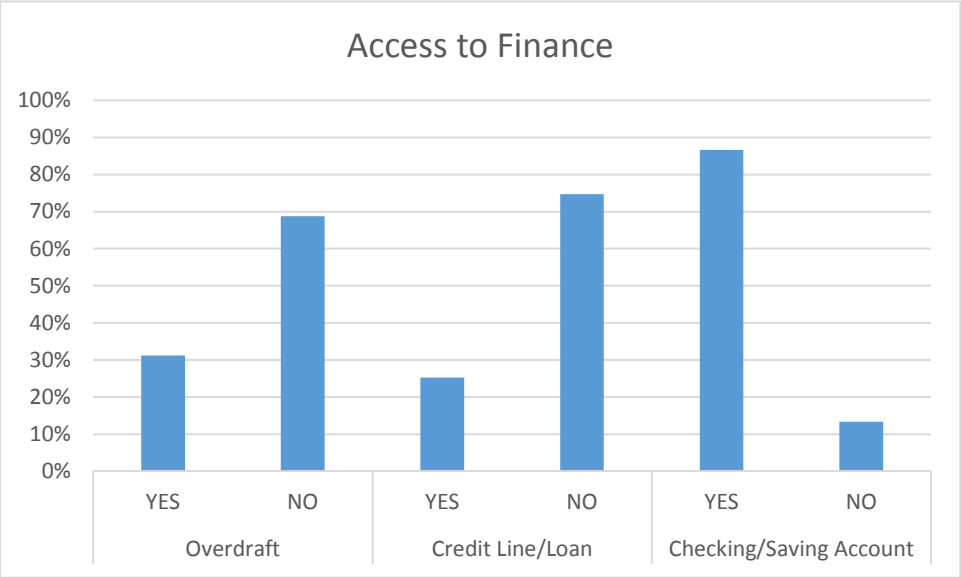
However, this percentage varies significantly across countries and year of the survey as seen in Appendix 7 and 8. For example, in 2010, approximately 97% of firms in Angola used internal funds to finance investment while in Botswana 87% of firms used internal funds. On the average, for financing working capital internal financing is the most used source of finance, followed by credit purchases and then borrowings from banks. Other sources of finance and non-bank borrowings are the least used sources of finance and for firms in countries like Burkina Faso, Niger, and South Africa they were not used at all. For financing investments in fixed assets, internal funds are still the most used source of finance, followed by other sources (i.e. funds from moneylenders, relatives, and friends). Bank borrowings ranks in third place,

while credit purchases come fourth and non-bank borrowings is the least source of finance used, firms in countries like Niger and South Africa do not make use of it at all.

### 4.2.2 Access to Finance Sources

This section provides information on the access of firms in this study to external sources of finance.

**Figure 34: Firms Access to Finance.**

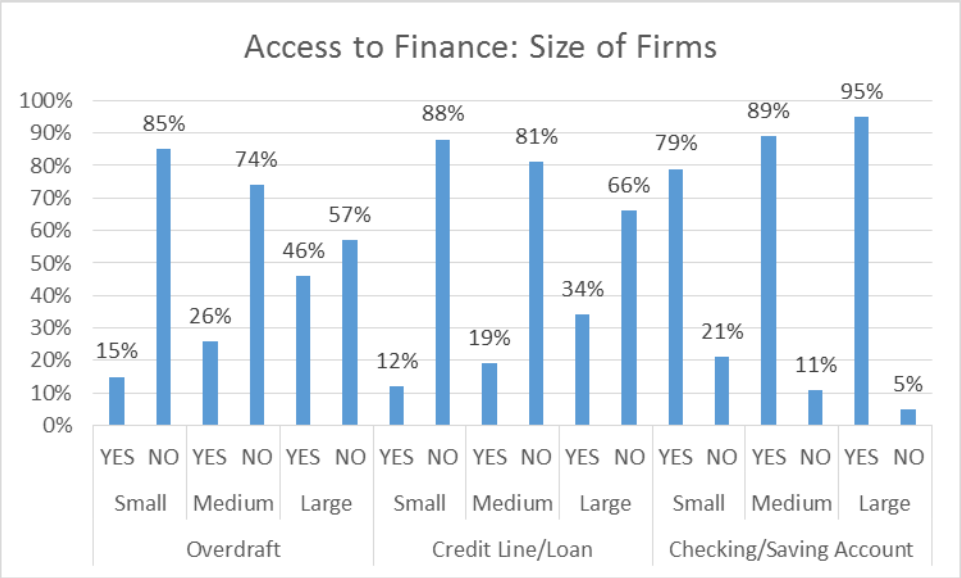



Source: Author's estimates using ES data

The figure above shows the percentage of firms with access to available finance options: overdraft facility, credit line/loan facility and checking/saving account. Only 31% of firms in our sample reported having access to an overdraft facility at the time the survey was conducted while 69% do not have access to overdraft facilities. 75% of firms do not have a credit line or loan facility, only 25% have access to a credit line/loan facility from a bank. A large percentage of firms (87%) have checking/saving accounts while only 13% do not have. Appendix 9 shows how this access differs for various countries and year of survey. For instance, firms in Angola had an improvement in their access to overdraft facility from 2% in 2006 to 12% in 2010. From the 2009 survey, Niger reported the highest percentage (73%) of firms with access to overdraft facilities. Firms from the 2010 survey in Botswana record the highest percentage (52%) of firms in this study with access to credit line/loan facilities. Firms in countries such as DRC, Kenya, and Niger recorded a decrease in the percentage of firms with access to credit line/loan facilities compared to the previous year of study.

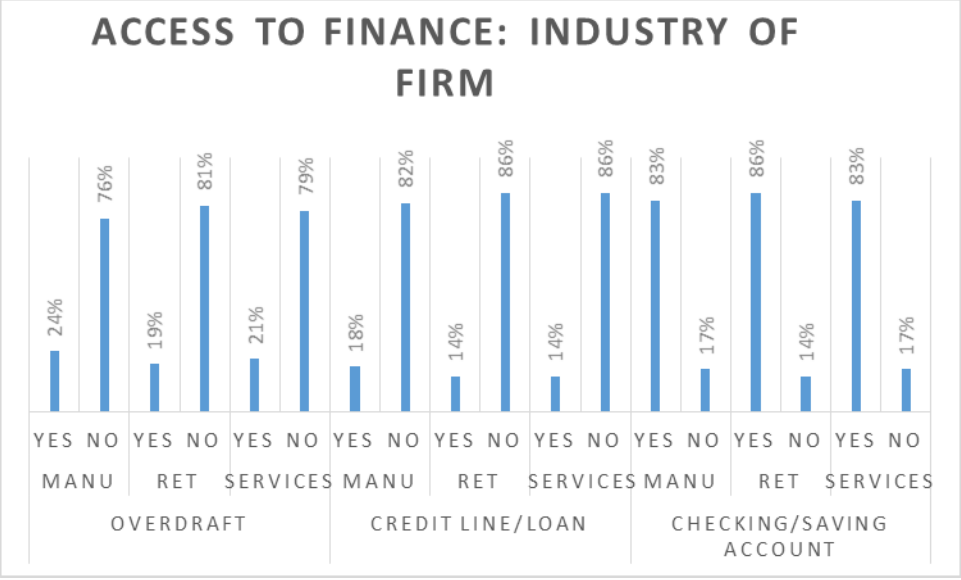
Figure 35 below shows how firms' access to finance differs according to their sizes. Smaller firms record the lowest access to overdraft and credit line/loan facilities (15% and 12% respectively). The highest percentage of firms with access to overdraft and credit line/loan facilities are large firms (46% and 34% respectively). Also, large firms account for the least number of firms without checking/saving account while small firms record the largest percentage. This shows that the size of a firm influences its ability to access finance.

**Figure 35: Access to Finance based on Firm's Size**




Source: Author's estimates using ES data

**Figure 36: Access to Finance based on Firm's Industry**




Source: Author's estimates using ES data

Figure 36 above shows how firms' access to finance differs based on the sector of they belong. Manufacturing firms record the highest percentage of firms with access to overdraft and credit line/loan facilities, firms providing other services have more access to overdraft facilities than firms in the retail sector. It is argued that manufacturing firms in comparison to firms in other sectors tend to have more access to finance because they undertake more innovation and R&D projects.

**Table 31: Access to finance based on type of ownership**

| **Type of Ownership** | **Overdraft** | | **Credit Line/Loan** | | **Checking/Saving Account** | |
|---|---|---|---|---|---|---|
| | **YES** | **NO** | **YES** | **NO** | **YES** | **NO** |
| Incorporations With Traded Shares | 35% | 65% | 28% | 72% | 90% | 10% |
| Incorporations With Non-Traded Shares | 36% | 64% | 28% | 72% | 93% | 7% |
| Sole Proprietorship | 14% | 86% | 11% | 89% | 79% | 21% |
| Partnership | 21% | 79% | 21% | 79% | 87% | 13% |
| Limited Partnership | 40% | 60% | 29% | 71% | 92% | 8% |

Source: Author's estimates using ES data

Table 31 shows firms' access to finance based on the type of ownership. Limited Partnership, incorporations with traded and non-traded shares firms have more access to finance compared to partnership and sole proprietorship. The following reasons where given by firms for not applying for loans or line of credit.

Reason 1: No Need for a Loan

Reason 2: Complex Application Procedures

Reason 3: Interest Rates Are Not Favourable

Reason 4: Collateral Requirements Are Too High

Reason 5: Size of Loan and Maturity Are Insufficient

Reason 6: Did Not Think It Would Be Approved

Reason 7: Other

**Table 32: Reasons for not applying for loans or line of credit.**

| Reasons | All Sample | Small Firms | Medium Firms | Large Firms | Manu | Retail | Other Services | Traded Shares | Non-Traded Shares | Sole Prio. | Partnership | Ltd Partnership |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47% | 37% | 52% | 67% | 43% | 45% | 46% | 66% | 60% | 39% | 49% | 53% |
| 2 | 14% | 17% | 11% | 6% | 15% | 14% | 13% | 3% | 10% | 17% | 11% | 8% |
| 3 | 17% | 20% | 16% | 11% | 17% | 19% | 16% | 14% | 15% | 18% | 18% | 20% |
| 4 | 10% | 13% | 9% | 4% | 10% | 11% | 12% | 7% | 6% | 13% | 9% | 7% |
| 5 | 2% | 2% | 3% | 1% | 2% | 2% | 2% | 2% | 2% | 2% | 3% | 1% |
| 6 | 4% | 5% | 3% | 1% | 5% | 4% | 4% | 3% | 2% | 5% | 4% | 3% |
| 7 | 6% | 6% | 7% | 8% | 7% | 6% | 7% | 5% | 5% | 6% | 6% | 8% |

Source: Author's estimates using ES data

The table above shows the reasons for the lack of access to loans or lines of credits for the whole sample and based on firm's size, the sector of the industry and ownership. For the whole sample, the most common reason for not applying was that the firm didn't need a loan, followed by unfavourable interest rates and complex loan application process. In terms of size, large firms were the highest proportion of firms who didn't need loans while small firms were the least. Also, small firms reported a higher percentage of firms affected by unfavourable interest rates, high collateral and the likelihood of loan not being approved. The reasons do not differ significantly based on the sector of the industry a firm belong to. Regarding ownership, sole proprietors are mostly affected while incorporations and limited partnership are least affected.

To sum up, internal funds are the most used source of finance for firms in this study. This could be because 66% of firms in our sample are small sized firms. The analysis above shows that small firms have less access to finance compared to medium and large firms and face more difficulties in obtaining finance. Also, the industrial sector and type of ownership of a firm affect its ability to access finance.

## 4.3 Literature Review

### 4.3.1 Theoretical Framework

This section explores the sources of finance available for firms and the theories or hypothesis on the major fundamental determinant factors most likely to limit firms' access to finance. Also, this section highlights the theoretical basis of the relationship between access to finance and firms productivity.

#### 4.3.1.1 Sources of Finance

There are two main classifications of the sources of finance available to the firm: internal and external sources of finance. Internal sources are funds readily available within the firm while external sources of finance are funds that come from outside the business and are not easily accessible. The decision on the choice of finance depends on a number of factors such as: the type of the firm (e.g. sole proprietor, partnership, and listed company), the age of the firm, the size of the firm, the level of financial development in the economy that the firm is operating in, the business cycle stage the firm has reached, the cost of procuring and utilizing the funds, amongst others.

The following internal sources of finance are available to firms: owner's savings or equity capital, retained profit, working capital, and sale of fixed assets. Owner-manager's personal savings is an essential source of financing especially for SMEs in the start-up phase (Abdulsaleh and Worthington, 2013). Ou and Haynes (2006, pg. 157) defines equity capital as "that capital invested in the firm without a specific repayment date, where the supplier of the equity is effectively investing in the business". There are internal and external means of raising equity capital. Internally, equity capital is generated from existing partners, current owner-manager(s), and their relatives or from the retained profits within the firm (Abdulsaleh and Worthington, 2013). Retained earnings are profits generated by the business from undertaking a profitable trade. They are usually saved as back-up for times of financial need and may be used later for a company's development or expansion (Abdulsaleh and Worthington, 2013).

The advantages of internal sources of finance are: (i) they do not require collateral and are usually interest free or attract lower interest rate, (ii) most internal sources of finance do not incur any cost in obtaining them[58], (iii) the owner/manager enjoys decision-making freedom as he doesn't need to seek approval before making changes or expanding. However, the following

[58] Some sources of internal finance require repayment with little or no interest payment (e.g. equity capital generated from relatives). Other sources such as owner's savings and retained profit do not require repayment.

disadvantages are associated with the use of internal sources of finance: (i) they are not usually sufficient where very large amounts of funds are required and not suitable for long-term investment, (ii) start-up companies and businesses experiencing extending period of losses do not have readily available retained profits, (iii) opportunity costs are involved because funds may be exhausted, and other investment opportunities have to be forgone, (iv) cash flow problems might arise when using some sources of internal financing because there is an informal agreement and the owner can demand for the money.

The following external sources of finance are available to firms: trade credit, external equity financing, debt financing (i.e. bank finance, non-bank financial institutional debt). Trade credit is a very important source of external finance for firms. It is defined "as the delay in the payment of goods and services after they have been delivered or provided as a result of an agreement between the supplier and the firm" (García-Teruel and Martínez-Solano, 2010, pg. 215). Trade credit as a source of external financing is more significant for firms in countries with less developed banking and financial systems (García-Teruel and Martínez-Solano, 2010). External equity financing involves raising capital from external channels other than existing partners and their relatives (Abdulsaleh and Worthington, 2013). The issuing of new equity usually involves a dilution of ownership and control. Debt financing involves borrowings from bank and non-bank institutions. Non-bank financial institutions include credit unions, finance houses/companies, insurance companies, and pension funds. Debt financing can be either short-term or long-term, and the former attracts a higher level of risk.

The advantages of external sources of finance are: (i) it allows firms to finance innovative or growth projects that they could not fund on their own, (ii) it permits the preservation of internal funds for other purposes that require cash payments and helps maintain sufficient cash flow, (iii) external financing can help small-scale business grow at a faster rate than using only internal funds, (iv) it provides higher economic scales and generates efficient profit when the interests are not high and payments are made on time. However, the following disadvantages are associated with the use of external sources of finance: (i) external financing can lead to the loss of ownership and control in exchange for capital, (ii) the cost of external funding are usually high. Debt financing is associated with high-interest payments, (iii) external financing can significantly affect cash flow and lead to loss of working capital. The availability of cash for day to day operation can be limited by the repayment of debts and dividends.

In sum, before deciding on the appropriate source of finance to use, firms should critically examine all the pros and cons of their choice and ensure that the benefit outweighs the cost.

#### 4.3.1.2 Determinants of Firms' Access to Finance

This sub-section highlights some of the factors that determine firms' ability to access the sources of finance discussed above.

##### 4.3.1.2.1 Country Characteristics: Financial Market Imperfection

In a perfect market, all market participants have complete information, and equal access to the capital markets is available to all firms (Ponikvar et al., 2013). This implies that finance is available for whichever investment project firms decide to undertake, and firms respond to changes in the cost of capital differently as a result of differences in investment demand (Ponikvar et al., 2013). These underlying assumptions indicate that the financial structure of a firm is independent of its real investment decisions (Sancak, 2002). Modigliani and Miller (1958) state that external financing (i.e. borrowing and new equity share issue) and internal financing (i.e. cash flow and retained earnings) are perfect substitutes in a perfect market. Therefore, a perfect market implies that the selection of investment and decision to invest should not be influenced by the availability of internal funds (Siedschlag et al., 2014).

However, in reality, firms operate in imperfect markets, where internal financing brings a cost advantage over external funds and access to external finance is not equal for all firms (Ponikvar et al., 2013). When internal and external finance are not perfect substitutes, the problem associated with asymmetric information implies that the cost of financing associated with external financial makes it more expensive than internal finance (Sancak, 2002). From the existing literature on access to finance, financial market imperfection leads to the occurrence of 'financing gaps' or financial market failures where firms are unable to finance viable projects (O'Sullivan, 2005; Oxera, 2005; BIS, 2012; Siedschlag et al., 2014). Financing gap is defined as a measure of the difference at the firm level between the need of external funds and the availability of funds (Siedschlag et al., 2014). According to Siedschlag et al. (2014) information asymmetries, intangible assets, transaction costs, high uncertainty, and investor's risk aversion are characteristics of an imperfect market. A financing gap is more likely to occur when:

- the uncertainty of the success of a project is high
- the level of information asymmetry between lenders and borrowers gets higher
- the firm has lower collateral
- the firm most likely has no track record

- the firm has minimal internal funds available

The presence of information asymmetry between lenders and buyers is one of the major causes of financial market imperfection which is linked to the financing gap (Siedschlag et al., 2014). These information asymmetries occur as a result of moral hazard (unobserved misbehaviour of borrowers) and adverse selection (unobserved borrowers' risk type). This leads to higher cost of external financing in comparison to the price of internal financing and potentially viable firms underinvest due to restricted access and suboptimal capital allocation (Siedschlag et al., 2014).

Particularly, on the side of the lender who lacks information on the profitability of the investment (to be carried out by the borrower i.e. the firm), it increases financing cost to undertake collateral evaluation and monitoring. Due to the difficulties associated with differentiating between high- and low-risk entrepreneurs, lenders base the decision to provide finance on collateral and track record (BIS, 2012). On the other hand, the borrower, who lacks insider information about external finance limits the demand for external financing due to lack of skills/capacity to evaluate opportunities and also fear of refusal (BIS, 2012). However, it is important to note that financial constraints linked to information asymmetries are more likely to affect start-ups, young, innovation and domestic enterprises (Siedschlag et al., 2014).

Other financial market imperfection characteristics such as moral hazards and positive externalities restrict firms' access to external finance. The separation of ownership and control generates moral hazard problems. Hall and Lerner (2010), argues that the presence of principal-agency problem, resulting from owners and managers having conflicting goals could lead to investment strategies that lack the potential to maximise shareholder's value. In such situations, agency costs involving managers financing certain investments that benefit them and risk-adverse managers being reluctant to invest in uncertain research and development projects may emerge (Eng and Shackell, 2001).

#### 4.3.1.2.2 Country Characteristics: Financial System Development

The financial system (made up of financial markets and intermediaries) plays an important role in determining firms' ability to access finance. Financial markets and intermediaries help firms to manage project risk and liquidity, mobilize resources, and facilitate the screening and monitoring of investment projects (Gimet and Lagoarde-Segot, 2012). Beck et al. (2006a) show that the most significant country characteristic that can explain cross-country variation in firms' financing obstacles is the development of institutions (including banks and stock markets).

According to Beck (2007), financial system development assists in closing the gap between small and large firms by increasing external finance to small firms at relatively low cost. The development of the financial system improves the functioning of the financial markets. This allows firms with good investment opportunities to have easier access to external finance (Love, 2003). Also, Wurgler (2000) show that the development of the financial system improves the capital allocation process, therefore, firms operating in economies with a more developed financial system have increased access finance compared to firms in underdeveloped or less developed financial systems. A well-developed financial market can diversify risks associated with investing in innovative ideas thus, reducing the cost of capital and improving firms' access to finance for innovative activities (King and Levine, 1993).

In sum, the level of development of the financial system plays an important role in firms' access to finance (Gatti and Love, 2008; Volz, 2013). According to Kira (2013), a well-developed banking system provides efficient services and ensures that resources are channelled to the most appropriate firms and investment opportunities. With a developed financial system, firms would be able to overcome the limitations lack of access to finance impose and contribute to the growth of the economy (Kira 2013).

#### 4.3.1.2.3 Firm Characteristics

The characteristics of a firm affect its ability to access external finance. These conditions are presumably conditions laid down by the financial institution- they prefer to lend to some groups and not to others, assess some groups more favourable than others. Various firm characteristics such as: location of the firm, the industry in which the firm operates, the size and age of the firm, the legal status of the firm, and the firm's business information are all important factors in determining access to finance by firms (Kira and He, 2012). The geographical proximity between lender and borrowers is linked to the ability of a firm to access finance (Berger and Udell, 2002). Lenders who are geographically close to their customers can use this as an advantage to establish the credit credibility of the customer by using soft available qualitative information. An enhanced form of environmental scrutiny is created from physical closeness between lenders and borrowers, this improves the firm's access to credit from lenders. Also, Fatoki and Asah (2011) argue that firms located in the rural area are less successful in obtaining finance compared to firms in the urban area because of lack of proximity[59] between lenders (located in the urban area) and borrowers (in the rural area).

[59] Bad road networks, high transportation cost.

The size and age of a firm are associated with its ability to access external finance. Burkart and Ellingsen (2004) state that the debt proportion in a firm's capital structure is significantly influenced by the size of the firm. This is because access to long-term debt is influenced by real assets. The stability of large firms is linked to the fact that their operations are well diversified, therefore, Honhyan (2009) argues that the size of a firm can be a substitute for insolvency measures. Small firms would experience difficulties accessing external finance because the cost associated with solving information asymmetry problems is more expensive for them (Cassar, 2004). Regarding the age of a firm, it is more difficult for firms that are start-ups or still in the early stage of operation to have access to finance because of information disparities. Chandler (2009) states that the longer a firm is in operation, the greater its ability to overcome adverse economic situations. Start-up firms do not have sufficient credit history to create a reputation on. A good credit reputation creates a path to access external finance because it reduces the moral hazard dilemma.

Other firm characteristics that affect access to external finance are firm legal status and the gender of the owner. The process involved in becoming a limited liability (incorporated) implies that they are more developed in comparison to a sole proprietor or partnership firm (Harhoff et al., 1998). The following provides justification for the relationship between firms becoming an incorporation and access to debt financing: one, the commitment of managers' increases because of the separation of ownership and management affairs. Two, corporations are required by law to publish their financial statements, this gives public users information about the firm's status including their debt ratio and firm's assets (Kira and He, 2012). Therefore, lenders are more comfortable providing funds to limited liability firms. There is also the effect of gender discrimination on access to finance. Female owners face a wide range of constraints that limits their ability to obtain external funds. One of the reasons is the perceived belief that women lack the financial capability and confidence to manage their finances thus impeding them from being in a position to take advantage of opportunities (Making Finance Work for Africa, 2016). Therefore, firms with male owners would more likely be granted a loan than those with female managers.

#### 4.3.1.2.4 Ownership Characteristics

Entrepreneurial characteristics such as managerial competency, networking, and relationship with the bank, experience, and educational background are important factors that affect firms' access to finance. This effect is more pronounced in SMEs because it is difficult to separate the business from the owner's characteristics (Kung'u, 2011). Particularly, the level of

education of the manager affects lenders willingness to provide funds. Kumar and Francisco (2005) states that the higher the level of manager's education the less difficult it will be to access finance. The reasons are: (i) entrepreneurs with a higher level of education have the adequate knowledge to build strong business plans and present positive financial information. They also have the ability to a maintain a good interpersonal relationship with financial institution compared to entrepreneurs with a lower level of education, (ii) the educated owners can acquire additional skills in finance, marketing, and human resources required for the management of the business. These skills result in the high performance of the business which helps those firms to access finance without difficulties, and (iii) from the supply side, in the loan approval process, lenders/bankers value higher education level of the owner/manager (Gabriel, 2015).

#### 4.3.1.3 Relationship between Access to Finance and Firms' Productivity

The previous section highlights the various sources of finance and some of the fundamental factors that determine firms' ability to access external finance. The next agenda is to establish the channels through which access to finance affects firms' productivity and ultimately economic growth. There are various channels through which access to finance affects firms' productivity, some of them would be discussed in this section.

The violation of the Modigliani Miller (1958) theorem provides the foundation of the link between finance and firms activities (Chen, 2010). According to Myers and Majluf (1984), the advent of agency cost, information asymmetry, and tax policies resulted in creating a difference between the cost of internal and external funds, thereby favouring debt financing over equity financing[60] (Chen, 2010). As a result, there has been ongoing debates amongst economic scholars on the links between finance and economic growth (Favarra, 2003; Levine, 2005; Becks, 2012). It is argued that one of the possible channels through which finance affects economic growth is via its effect on firms' productivity (Gatti and Love, 2008; Chen, 2010). Therefore, it is important to explore the mechanism through which finance fosters growth by promoting productivity, which is an essential intermediate link between firms activities and growth (Chen, 2010; Becks, 2012).

[60] Issuing additional equity to satisfy the firm's financial needs would lead to a dilution in ownership and control. The separation of ownership from professional management usually creates asymmetric information and agency cost. To retain full ownership and control of their firms, firm owners are more willing to source for debt financing over equity financing.

Gatti and Love (2008) state that the theoretical justification for the proposition that finance affects economic growth through its effects on productivity has been provided by several models. Some models postulate that technological innovation an important element of economic growth results from firm-level productivity brought about by access to external finance (Chen and Guariglia, 2013). In these models, information and transaction costs associated with external finance are alleviated following the provision of real services by the financial sectors to firms (Gatti and Love, 2008). The financial system plays an essential role of supplying innovative firms with capital and provides efficient services, thereby, making projects with longer gestation and higher return more attractive to firms (Levine. 1991; Bencivenga et al., 1995; Ayygari et al., 2007; Gatti and Love, 2008; Chen, 2010).

It is also important to study the effect of finance on productivity because at the macro-level total factor productivity (TFP) accounts for the cross-country differences in the level or growth of gross domestic product (GDP) per capita (Easterly and Levine, 2001). Total factor productivity (TFP) is assumed to be an essential element in enabling the understanding of economic growth. An increase in productivity infers that higher level of output is produced with the same amount of capital and labour input in an economy, which technically implies economic growth (Levine and Warusawitharana, 2014). Therefore, the evidence of a link between finance and productivity growth in the firm-level provides an important and additional mechanism through which the financial system can affect overall economic growth (Levine and Warusawitharana, 2014). Based on these, it becomes important to examine how finance affects growth through the direct promotion of firms' productivity.

Nevertheless, research and development (R&D) activities that enhance firms' productivity are associated with high risks and uncertainty; requiring substantial investments (Chen and Guariglia, 2013). In addition, firms committed to carrying out such innovative activities encounter difficulties in obtaining loans from banks because of the nature of the intangible assets they hold (Brown et al., 2009). Innovative firms have more intangible assets, which cannot be used as collateral. They relatively hold more "skilled labour assets" such as patents and knowledge than physical assets (i.e. lands and buildings) that are accepted as collateral. Therefore, it would be expected that the unavailability of external finance would strongly affect the productivity of these firms (Chen and Guariglia, 2013). According to Becks and Honohan (2008), one of the major challenges of firms' growth and productivity in developing countries is access to external sources of finance and the financial sector supports the development and

growth of developing economies by providing financial services to firms with good growth prospects.

The magnitude of the effect of finance on firms' productivity is not uniform across all firms. Based on the size and structure of firms, the extent of the effect of financing constraint differs. Start-up, young, innovative, small-scale domestic firms, and more technologically advanced industries are assumed to feel the impact of these constraints more on their productivity (Siedschlag et al., 2014). Access to internal and external finance is positively related to the success of firms' start up and the possibility of firms' survival (Becks and Honohan, 2008). Barney (1991) builds on the strategic management literature and suggests that the productivity of a firm is determined by both the external analysis (environment) and internal analysis (characteristics) of a firm. The external analysis focuses on analysing a firm's opportunities and threats within its competitive environment while internal analysis involves the creation and implementation of strategies using individual firm resources (such as human capital, physical capital and organizational capital) to improve the firms' competitiveness (Barney, 1991). Therefore, the success, and in the long-run firms' productivity is directly affected by the lack of both internal and external financial resources (Stucki, 2014).

According to Beck and Robert (2014), a vast majority of firms in Africa fall into the category of SMEs with more than 50 percent of the labour force employed in companies with fewer than 100 employees and 95 percent of enterprises belong to the category of SMEs (Ayyagari et al., 2011). Siedschlag et al. (2014) states that Small and medium-sized enterprises (SMEs) tend to depend highly on banks loans and credit lines from domestic markets to finance their investment projects, contrary to large multinational enterprises that can obtain funds from international markets. Evidence from theoretical and empirical analysis indicate that SMEs encounter higher constraints concerning capital costs and credit conditions compared to larger enterprises. This is because SMEs are prone to a higher probability of failure and asymmetric information resulting from insufficient collateral, inadequate track record, and absence of credit guarantees (Siedschlag et al., 2014). Therefore, although SMEs constitute an important component of the private sector in the developing world, they report significantly higher obstacles to their operations and growth than large enterprises (Beck et al., 2006a).

For firms to be able to increase productivity and impact economic growth, there is the need to invest in fixed capital expenditure. Investing in productivity-enhancing inputs improves efficiency gains for the firm, also the productive capacity of the economy is enhanced (Siedschlag et al., 2014). Finance is required by already existing firms to be able to take

advantage of investment opportunities and increase production capacity (Becks and Honohan, 2008). Access to external finance affects firms' ability to invest in tangible assets (Siedschlag et al., 2014; Becks and Honohan, 2008). The presence of market imperfections creates a disparity between the internal and external cost of financing, hence, firms may only be able to invest until internal funds are depleted (Stiglitz and Weiss, 1981). The responsiveness of investment to external finance is linked more too young and micro-sized firms. These firms are more likely to run short of internal funds and are unable to convince lenders to provide funds as a result of lack of collateral, track record or increased risk. This results to adverse effects on their growth potentials and chances of survival (Siedschlag et al., 2014).

The lack of access to finance implies that firms facing financial constraints are less able to sustain unexpected losses, even for a short period (Mata et al., 1995). Also, financially constrained firms are forced to cut cost to generate the resources they cannot obtain from the financial market. Therefore, lack of access to finance restricts the ability of a firm to invest in productivity-enhancing activities, leading to an adverse effect on firm success (Holtz-Eakin et al., 1994; Aghion et al., 2007). Also, a firm's productivity is affected by the lack of access to finance because financially constrained firms have limited access to other value-creating services that accompany external financing especially venture capital investments (Jain and Kini, 2000; Manigart et al., 2002).

Another channel through which access to finance affects firms' productivity is via employment of labour. Highly skilled and competent workers are required to undertake productive activities and for the daily functioning and management of a firm. Nickell and Nicolitsas (1999) state the hiring of employees reduces as a result of increasing cost of borrowing. Lack of access to finance leads to a decrease in labour employment as a means of sustaining working capital. Also, already employed workers in firms see the lack of access to finance as a threat to their jobs. This could naturally lead to workers reducing their level of dedication to the job which impacts on the goods and services produced and in turn affects the firm's productivity.

Caggese and Cunat (2008), further argues that access to finance affects the terms of contract (that is fixed-term and permanent contracts) firms are willing to enter with employees. Financially constraints firms are more willing to employ fixed-term workers that are less productive compared to permanent workers. The effect of this is that fixed-term workers are flexible and do not have any firing cost associated with their contracts. They could easily leave half-way in a production process thereby hampering productivity. This indicates that access to finance affects the quality of workers a firm seeks to employ (Milanez, 2013). Firms that are

financially constrained would encounter difficulties in employing workers with firm-specific knowledge but would be willing to employ workers with general skills because they are less expensive. Employees with high firm-specific skills are less likely to quit their job and bring in more expertise to the production process (Milanez, 2013).

Lastly, access to finance affects firm's productivity via export behaviour and export performance. The 'learning- by-exporting' hypothesis states that firms gain new knowledge and expertise because they enter the export market, which in turn improves their efficiency level and productivity (De Loecker, 2007). Access to finance has been considered as one of the factors that determine the differences in export behaviour and export performance across firms in an industry (Manova, 2008; Berman and Hericourt, 2010; Bellone et al., 2010; Chaney, 2013). Particularly, increased access to external financing enhances the effect of productivity on the selection of firms into export in imperfect financial markets, (Siedschlag et al., 2014).

Chaney (2013) states that due to the significant sunk cost linked with participating in export, only firms with easy access to finance can engage in export activities. On the other hand, engaging in export activities provides access to external funds in the international market (Bellone et al, 2010). Lastly, exporting can facilitate the reduction of information asymmetries because of lenders/investors perceived notion of export as a sign of external competitiveness. (Ganesh-Kumar, 2001). Therefore, access to finance affects firms' productivity via exporting through more stable cash flows derived from international diversification of sales and lowering exposure to demand-side shocks (Bridges and Guariglia, 2008).

To sum up, it has been established in the theoretical literature that access to finance affects the productivity of the firm. Lack of access to finance impedes investment in high-quality projects leading to lower firm productivity (Moreno-Badia and Miranda, 2009). The mechanism of this effect is based on the role of well-developed financial markets in allocating funds to productivity-enhancing investments and that long-term productivity-enhancing projects are facilitated by liquid financial markets (King and Levine, 1993; Bencivenga et al., 1995; Levine, 2005). Also, export behaviour and performance affect firms' productivity because exporting improves the ability of a firm to access external finance. On the other hand, firms that are financially constrained are not able to participate in exporting activities, thereby hampering their productivity (Bricongne et al., 2012).

### 4.3.2 Empirical Review

This section reviews some existing literature on the determinants of access to finance and its effect of firms' productivity.

#### 4.3.2.1 Determinants of Firms' Access to Finance

Hall et al., (2000) in a study of 3500 small and medium sized enterprises (SMEs) in the United Kingdom found that the access to external finance is determined by the industrial sector in which a firm conducts business. Providers of external financing are more attracted and willing to provide funds to firms operating in huge capital-intensive sectors such as manufacturing and construction. Using data from U.K's manufacturing firms from 1989 to 1999, Bougheas et al., (2006) found that several firm-specific characteristics such as such as size, collateral, riskiness, age, and profitability are important determinants of access finance. They also found that smaller, riskier, and younger firms felt the impact of monetary policy conditions in obtaining external finance. Beck et al., (2006a) studied 80 developing and developed countries for the period 1999 and 2000 using firm-level data from the World Business Environment Survey (WBES). The results showed that countries with higher levels of financial intermediary development, more efficient legal systems, higher GDP-per-capita and more liquid stock market report lower financing obstacles.

Lago et al., (2007), examined the determinants of access to finance for 60,000 Spanish firms for the period 1992 to 2002. Using dynamic panel data estimation techniques and four measures of external financing, results obtained showed that the availability of collateral and the nature of the relationship between borrowing firms' and the bank affected firms' access to external finance. Also, firm characteristics had a marginal effect on external financing because Spanish firms depend majorly on short-term non-bank financing (such as trade credit). Canton et al., (2010) studied the determinants of access to finance for firms in the European Union and found that the ownership structure of firms and the age of firms are the most important determinants of access to finance. Other factors that determined firms' access to finance include: the relationship between the bank and the firm and the banking sector degree of competition. Ferrando and Griesshaber (2011) used a new set of data obtained from the ECB- European Commission Survey on the 'Access to Finance of small and medium-sized Enterprises' (SAFE) to study more than 5000 firms in the Euro Area. They found that only firm age and ownership are important factors in determining access to finance in the euro area.

For studies on African countries, Harrison and McMillan (2003) used 399 firm data in Ivory Coast to show that domestic firms experience more difficulties in accessing external funds compared to state-owned and foreign firms. Firms listed on the stock exchange experienced lesser financial constraints in comparison to unlisted firms. Fatoki and Assah (2011) studied the impact of firm and entrepreneurial characteristics on access to finance in South African firms using self-administered questionnaire. The results obtained suggested that availability of collateral, maintaining proper business information and managerial competence were important factors for sourcing external funds.

Kira (2013), studied the determinants of financial constraints in five East African countries in the East African Community (EAC) region. Using World Bank's Business Enterprise Survey of 1993 Small and Medium-sized Enterprises (SMEs), the results showed that firm characteristics such as firm age, firm size, incorporation, type of ownership, the sector of economic activity or country were all binding factors across all firms, but SMEs are mostly affected. Kacem and Zouari (2013) examined the effect of socio-economic factors on the access to external finance in microfinance institutions in Tunisia. They found that age, level of education of manager and risk aversion were important factors that determined access to external finance. They also found that female managers experienced more difficulties in accessing external funds, and the absence of a guarantor was the primary barrier to accessing finance for microfinance institutions in Tunisia.

In summary, these studies show that the ability of a firm to access external finance is determined by several factors and small and medium-sized enterprises (SMEs) are mostly affected.

#### 4.3.2.2 Relationship between Access to Finance and Firms' Productivity

There is only a small literature that has attempted to examine the effect of access to finance on firms' productivity. Most of the existing literature on the relationship between finance and productivity focus on the role of financial development and are conducted at the macro level.

Nickell and Nicholitas (1999) studied 670 manufacturing companies in the UK from 1972-1986 using data from EXSTAT data table. The results obtained show that firms productivity is positively affected by the measure of financial pressure (defined as the ratio of interest payments to cash flow). Schiantarelli and Sembenelli (1999) used data on firms in the UK and Italy to show that the performance of firms (measured as TFP, profitability, and sales growth) with a higher proportion of long-term debt in their capital structure increased. The results

obtained are similar to studies for Ecuador by Schiantarelli and Jaramillo (1999) and India by and Schiantarelli and Srivastava (1999).

Using World Bank survey data from Bulgaria, Gatti and Love (2008) estimated the effect of access to credit (proxy by a dummy variable indicating whether firms have access to a credit or overdraft) on productivity. The results obtained showed that access to credit positively and significantly affects productivity across firms. In contrast, Moreno-Badia and Slootmaekers (2009) in a study of firms in Estonia developed new methodologies to provide evidence of the relationship between access to finance and firm-level productivity. Results obtained showed that although many Estonian firms are financially constrained, this does not affect the level of productivity in most of the sectors except R&D.

Chen and Guariglia (2013) evaluated the effect of internal finance on firm's productivity. Using data from annual accounting reports of industrial firms in China over the period 2001-2007, they found that the productivity of Chinese firms is positively affected by the availability of internal finance. The results suggest that at the firm-level, an increase in the accessibility of finance improves productivity. Ferrando and Ruggieri (2015), using firm-level data for euro area countries evaluated the effect of access to financial constraints on labour productivity for the period 1990-2011. The results obtained showed that the lack of access to external finance negatively affects labour productivity. The impact of this effect is felt mainly in the Energy, Gas, Water Supply, R&D, Communication and Information sectors, also on small and micro firms.

In contrast, Nunes et al., (2007) and Nucci et al., (2005) obtained results showing that access to finance negatively affects labour productivity. Nunes et al., (2007) applied a quantile approach in a study of 162 Portuguese firms for the period 1999 to 2003, results obtained showed that debt financing tends to decrease labour productivity for firms with low labour productivity and increase productivity for firms with high labour productivity. Using data on Italian firms, Nucci et al., (2005) found that the productivity of firms is negatively affected by debt-financing. The results obtained show that there exists a negative causal relationship between the level of debt in a firm's capital structure and its ability to be innovative.

Empirical studies on the effect of access to finance on firms' productivity are almost non-existent for African countries. The few existing studies investigate the effect of access to finance on efficiency (Ferdinand and Dasmani 2010). They used 2007 data from the World Bank Enterprise Survey to calculate firm level efficiency scores for 270 firms in Ghana. The

study found that increase in access to finance makes firms inefficient. Another study on Nigeria by Obembe (2011), studied the effect financial constraints on productivity growth in 76 listed non-financial firms for the period 1997 to 2007. The results obtained showed that bank loans have positive effects on the productivity of firms. From a sample of micro and small firms in Kenya, Mwangi (2014) used data from the 2007 World Bank Enterprise Survey to show the insignificant effect of access to finance on firm productivity.

This study fills the gap in the literature by providing an empirical analysis of the effect of access to finance on firms' productivity in a number of African countries. It also uses more direct measures of access to finance, such as having a checking or savings account, the presence or absence of overdrafts and lines of credit.

## 4.4 Methodology and Analytical Framework

This section provides a description of variables and the methodology used in this study.

### 4.4.1 Model Estimation

#### 4.4.1.1 OLS Estimates

The effect of access to finance on firms' productivity is estimated by regressing the equation below:

$$lnY_{it} = \beta_o + \beta_1 AC_{it} + \beta_2 OB_{it} + \beta_3 F_{it} + \beta_4 C_{it} + \varepsilon_{it} \qquad (8)$$

Where subscripts $i$ $and$ $t$ denote the firm and year respectively. Y is the dependent variable measured by estimates of labour productivity and total factor productivity, AC is the main explanatory variables (the three measures of access to internal and external finance), OB is also an explanatory variable capturing firms' perceived effect of finance constraints, F is firm-level characteristics, C captures country characteristics and $\varepsilon$ is the error term. We run various OLS estimation models to check for robustness and minimize possible biases.

#### 4.4.1.2 IV-GMM: Instrumental Variable Model

From equation 8, potential econometric issues i.e. endogeneity might arise. Particularly, measures of access to credit are potentially endogenous because banks are more willing to provide finance to firms with higher levels of productivity. Therefore, OLS estimates may be biased, a negative coefficient on access to credit can imply that less productive firms are less likely to access credit than lack of access to credit negatively affects productivity. Following Gatti and Love (2008) and Mwangi (2014), this study estimates an instrumental variable (GMM) model to address potential endogeneity bias between access to credit and firm productivity. .

The Generalised Methods of Moments estimator (IV-GMM) introduced by Hansen (1982) allows for heteroscedasticity of the disturbance term. It is more efficient than the 2SLS in the presence of heteroscedasticity standard errors and does not require that the assumptions on error terms are distributional (Hall, 2005). However, the shortcoming of this method is finding the appropriate instrument. "A good instrument" is required to be both valid and relevant, correlated with the endogenous explanatory variable and orthogonal to the error term at the same time (Baum et al., 2003). The effect of a good instrument on the dependent variable should be felt through no other channel other than through the endogenous explanatory variable (Mwangi, 2014). This study uses the type of ownership and the sex of the owner(s) as

instruments for access to credit. The type of ownership (i.e. sole-proprietorship, partnership, non-listed or listed companies) is likely to influence the ability of a firm to access credit (e.g. firms would willingly lend to listed companies with limited liabilities) (Kira and He, 2012). Also, the gender of the owner(s) influences a firm's ability to access finance. The 2016 making finance work in Africa report, shows that banks in Africa are more willing to lend to firms with male managers because of the perceived idea that women lack the financial capability and confidence to manage their finances. Therefore, listed companies and male manager dummies should be positively correlated with access to credit but not with the current levels of productivity.

#### 4.4.1.3 Stochastic Frontier Model

To solve the possible simultaneity bias and other measurement errors of OLS estimation, we run stochastic frontier analysis for Cobb-Douglas and translog production functions. The stochastic frontier approach makes allowance for stochastic errors due to statistical noise or measurement errors. The model was first introduced by Aigner et al., (1977) and Meeusen and van den Broeck (1977) and specifies output, cost, etc. in terms of a response function and a composite error term. The stochastic frontier model decomposes the composite error term into a two-sided error representing random effects outside the control of the firm (decision making unit) and the one-sided technical efficiency component.

According to Aigner et al., (1977), the random error effects represents random variations in the economic environment (such a weather, luck, machine breakdown, and variable input quality: measurement errors and omitted variable) that firms' face in the course of production. The efficiency component represents a range of features (such as skills and effort of management and employee, firm-specific knowledge, work stoppages, and material bottlenecks) that reflects if a production process is efficient or inefficient. Aigner et al., (1977) and Meeusen and Van den Broeck (1977) assumes that the distribution of the efficiency error component is asymmetric and has an exponential and half-normal distribution.

The stochastic frontier model can be specified as:

$$Y_i = f(X_i\,\beta) + \varepsilon_i \qquad (9)$$

Where Y denotes the maximum output obtainable from $X_i$, a vector whose values are functions of inputs (non-stochastic inputs), $\beta$ is a vector of unknown parameters to be estimated, and $\varepsilon_i$ is the disturbance term. However, $\varepsilon_i$ is equal to $V_i - U_i$, $V_i$ refers to the random part of error, with normal distribution, independent and identically distributed and $U_i$ is the part relating to

technical inefficiency in production. In this study, the Cobb-Douglas functional form for the stochastic frontier is given as:

$$lnY_{it} = \beta_0 + \sum_i \beta_1 \, lnX_{jit} + \beta_2 AC_{it} + \beta_3 \, OB_{it} + \beta_4 F_{it} + V_{it} - U_{it} \quad (10)$$

And the trans-logarithmic functional form for the stochastic frontier is given as:

$$lnY_{it} = \beta_0 + \sum_i \beta_1 X_{jit} + \frac{1}{2} \sum_i \sum_k \beta_{i,k} \, lnX_{jit} + \beta_2 AC_{it} + \beta_3 \, OB_{it} + \beta_4 F_{it} + V_{it} - U_{it} \quad (11)$$

Where Y represents the quantity of output produced, $X_1$ represents the total labour cost (including wages, salaries and bonuses), $X_2$ is the net book values of machinery vehicles, equipment, land and building or the cost of raw material and intermediate goods used, AC is the main explanatory variables (the three measures of access to internal and external finance), OB is also an explanatory variable capturing firms' perceived effect of finance constraints, and F is firm-level characteristics.

### 4.4.2 The Method: Estimating Productivity

The productivity of a firm is an unobservable firm characteristic (Gatti and Love 2008). In this study, firms' productivity is estimated using three measures: (i) Labour productivity, (ii) Total Factor Productivity, and (iii) Stochastic frontier Cobb-Douglas and translog model. Labour productivity measures the amount of goods and services produced by one hour of labour. In this study, labour productivity is equal to the total annual sales in the last fiscal year divided by the number of permanent, full-time employees in the firm at the end of last fiscal year.

Comin (2010, pg.1) defines "Total factor productivity (TFP) as the portion of output not explained by the amount of inputs used in production." TFP growth is usually measured by the Solow residual. Estimates of productivity can be gotten as the difference between actual output and output estimated by a production function using actual input quantities (Gatti and Love 2008). Productivity can be obtained from the regression of:

$$lnY_i = \alpha + \beta_K lnK_i + \beta_i lnL_i + \varepsilon_i \quad (12)$$

Where $Y_i$ is firm's output, K and L are capital and labour, $\beta_K$ and $\beta_i$ are capital and labour shares and $\varepsilon_i$ is the error term. TFP, the estimated residual, is obtained in this model as the difference between actual and predicted output, or $\widehat{\varepsilon_i} = lnY_i - ln\widehat{Y_i}$. In this model labour is captured using the total labour cost (including wages, salaries and bonuses) and capital is captured using either the addition of net book values of machinery vehicles, equipment, land

and building or the cost of raw material and intermediate goods used in production in the last fiscal year.

There has been an on-going debate by researchers on which measure is the 'best' for capturing productivity growth. On the one hand, there are those who argue that TFP is the appropriate measure of productivity growth, and that labour productivity is a much cruder measure. On the other hand, there are those who argue that TFP depends too much on arbitrary assumptions, and that labour productivity is more closely related to current living standards, which is what society ultimately cares about (Sargent and Rodriguez, 2001). Note that all cost, sales, and net book values are converted to USD using prevailing exchange rate and consumer price index in the year of survey. This is similar to the methodology adopted by Gatti and Love (2008) and Chen and Guariglia (2013).

### 4.4.3 Description of Data

To analyse the effect of access to finance on firms' productivity in Africa this study uses the World Bank Enterprise survey data. The Enterprise surveys (ES) are an ongoing project by the World Bank. The studies are implemented using firm level surveys and involve the collection of both objective and subjective data based on firms' experiences and enterprises' perception of the environment they operate. The survey began in 2002 and has since evolved over the past years, making use of standardized methodology of implementation, sampling and quality control in most client-countries of the World Bank.

The Enterprise surveys interviews business owners and top managers and has currently covered 125,000 firms in 139 countries, of which over 94,000 interviews in 126 countries have been surveyed under the global methodology. In each country, the ES assesses the constraints to job creation and private sector growth. It also links the performance of firms and other firm characteristics with the business environment they operate in. The questionnaire covers the following topics: firm characteristics, corruption, crime, finance, gender, informality, infrastructure, innovation and technology, performance, regulation and taxes, trade and work force.

The focus of this study is on finance, and the ES ask firms questions relating to the characteristics and method of financing their operations. The following indicators are provided from the ES survey (i) a comparison of the relative usage of various sources of finance for working capital and investment, (ii) the measure of firms' access to the various sources of

finance, and (iii) a measure of the obstacle finance poses to the operation of the firm. The following sources of finance are included in the ES:

- Internal sources of finance which include: internal funds or retained earnings, owners' contribution, other, friends, relatives, etc.
- External sources of finance which include: borrowings from private and state owned banks, borrowings from non-bank financial institutions such as credit cooperatives, microfinance institutions, and credit purchases from suppliers and advances from customers.

Specifically, the measure of firms' access to the sources of finance are derived by asking the following questions:

1. The proportion of working capital financed from each of the sources of finance.
2. If they have a line of credit or loan from a financial institution.
3. The proportion of investments (purchase of fixed asset) financed from each of the sources of finance
4. The value of collateral needed for a loan or line of credit as a percentage of the loan value or the value of the line of credit.
5. The proportion of loans requiring collateral and the type of collateral required.
6. How much of an obstacle is: Access to finance.

This study is carried out on 17 countries in Africa and consists of pure cross-sectional data for which information is available on all variables for our baseline regression. The countries studied, (sample size and survey year in brackets) are Angola (343 firms, survey years are 2006 and 2010), Botswana (177 firms, survey years are 2006 and 2010), Cameroon (199 firms, survey years are 2006 and 2009), Democratic Republic of Congo (DRC) (279 firms, survey years are 2010 and 2013), Ghana (491 firms, survey years are 2007 and 2013), Kenya (284 firms, survey years are 2007 and 2013), Malawi (151 firms, survey years are 2009 and 2014), Mali (466 firms, survey years are 2007 and 2010), Nigeria (615 firms, survey years are 2007, 2009, and 2014), Senegal (548 firms, survey years are 2003 and 2007), South Africa (1079 firms, survey years are 2003 and 2007), Tanzania (472 firms, survey years are 2006 and 2013), Uganda (563 firms, survey years 2006 and 2013), and Zambia (564 firms, survey years 2007 and 2013).

The descriptive statistics of the variables used in this study is reported in appendix 6. It shows that about 66% of firms in our sample are small firms (5 to 19 employees), 26% are medium (20 to 99 employees) and only 8% are large firms (more than 100 employees). Also, approximately 79% and 83% of firms in our sample do not have overdraft facilities and loan respectively, while only 15% do not have checking/savings accounts.

### 4.4.4 Description of Variable

This study uses firm-level data from World Bank Enterprise Survey. We collect individual country data from 17 African Countries with data for at least two periods and build a pure cross-sectional data for the years ranging from 2006-2014. The total number of firms with data on all the required variables is 4682.

We construct the following three variables to measure the access to finance from the Enterprise Survey: (i) Overdraft - is a dummy variable equal to one if the firm has no overdraft facility at the time of the survey and zero otherwise, (ii) Credit line/loan - is a dummy variable equal to one if the firm has no line of credit or loan from a financial institution at the time of the survey and zero otherwise, and (iii) Checking Account - is a dummy variable equal to one if the firm has no checking or savings account at the time of the survey and zero otherwise. In this study, we assume that overdraft and credit line/loan capture firms' access to external finance because they are short-term (overdraft) and long-term (credit line/loan) debt services provided by financial institutions. Checking/saving account is used to capture access to internal finance based on the assumption that firms would keep retained earnings in a current account with banks or in a savings account to earn some interest until when the funds are needed.

We also construct variables to rank how firms perceive finance as an obstacle in their business operations. The following variables are constructed: (i) No obstacle is a dummy variable equal to one if finance is no obstacle to the firms' operation at the time of the survey and zero otherwise, (ii) Minor obstacle is a dummy variable equal to one if finance is a minor obstacle to the firms' operation at the time of the survey and zero otherwise, (iii) Moderate obstacle is a dummy variable equal to one if finance is a moderate obstacle to the firms' operation at the time of the survey and zero otherwise, (iv) Major obstacle is a dummy variable equal to one if finance is a major obstacle to the firms' operation at the time of the survey and zero otherwise, and (v) Very Severe obstacle is a dummy variable equal to one if finance is a very severe obstacle to the firms' operation at the time of the survey and zero otherwise.

Also, we use information from the Enterprise Survey to control for firm-level characteristics that might affect a firm's productivity and ability to access financial services. Particularly, dummy variables are constructed to capture firms' size (small, medium and large), publicly listed firms, sole proprietorships, firms' age (log values), and managerial experience (log values). To control for country-level characteristics data from World Bank is used for individual countries and years of survey to capture GDP per capita and domestic credit to the private sector by banks (% of GDP). GDP per capita measures economic growth while domestic credit is a measure of the level of financial development of the economy the firm is operating.

## 4.5 Empirical Results

### 4.5.1 OLS Estimates: Total Factor Productivity Model

The baseline regression results for TFP model is presented in tables 33 and 34, while the results for labour productivity model is provided in table 38.

**Table 33: Base Regression Results (OLS): Whole Sample**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable: Total Factor Productivity: Labour Cost and Material Cost (Log Value) | | | | |
| Overdraft | -0.196*** | -0.188*** | -0.147*** | -0.257*** |
| | (0.040) | (0.043) | (0.043) | (0.043) |
| Credit Line/Loan | -0.099** | -0.082* | -0.046 | - 0.047 |
| | (0.050) | (0.045) | (0.045) | (0.044) |
| Checking Account | -0.109** | -0.111 ** | -0.078 | - 0.141*** |
| | (0.047) | (0.048) | (0.048) | (0.048) |
| Moderate Obstacle | | 0.134*** | 0.165 *** | 0.069 |
| | | (0.050) | (0.050) | (0.050) |
| Major Obstacle | | -0.001 | 0.016 | -0.082* |
| | | (0.047) | (0.046) | (0.046) |
| Very Severe Obstacle | | -0.138 *** | -0.122 | -0.236*** |
| | | (0.050) | (0.049) | (0.049) |
| Small Firm | | | -0.294*** | -0.799*** |
| | | | (0.067) | (0.057) |
| Medium Firm | | | -0.280*** | -0.432*** |
| | | | (0.066) | (0.056) |
| Age of Firm (Log) | | | 0.112*** | 0.232*** |
| | | | (0.023) | (0.038) |
| Managerial Experience (Log) | | | 0.021 | 0.005 |
| | | | (0.024) | (0.024) |
| GDP Per Capita (Log) | | | | 0.445*** |
| | | | | (0.024) |
| Domestic Credit | | | | 0.004*** |
| | | | | (0.0004) |
| Observations | 4976 | 4746 | 4682 | 4682 |
| R-Squared | 0.0107 | 0.0150 | 0.0163 | 0.0900 |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively

The table above presents results for the whole sample in this study using total factor productivity as the measure of firms' productivity. To derive total factor productivity - capital is measured as the net book value of machines, lands and building. Labour is measured as the cost of labour. However, the data on net book value is limited and leads to loss of significant dataset, therefore, we proxy using cost of raw materials following studies like Ferdinand and Dasmani (2010); Mwangi (2014). The results using net book value and cost of labour are robust and reported in Appendix 10. The results are OLS estimates of the relationship between firms' TFP and the effect of lack of access to finance, proxy by the absence of credit line/loan, overdraft facility, and checking account. The results in table 33 show that irrespective of the control variables used the lack of access to finance negatively affects productivity of firms. When only access to finance and the perceived effect of financial constraint are measured (column 1 and 2) the results shows that the level of productivity of firms is reduced by 18.8%, 8.2% and 11.1% as a result of lack of access to overdraft facilities, credit line/loan and checking account respectively. Also, firms who perceive finance as a very severe obstacle experience a reduction in productivity by 13.8% while productivity increases by 13.4% for firms who rank finance as a moderate obstacle.

The results are similar when control variables are added to capture firm and country-level characteristics (column 3 and 4). When firm-level characteristics are added the negative effect of checking account and credit line/loan becomes insignificant, while only credit line/loan is insignificant when country-level characteristics are captured. The negative effect of the lack of overdraft facilities on firms' productivity remains significant at 1% in all cases. Also, the size and age of a firm affect its productivity small and medium sized firms experience a reduction in their productivity levels while older firms have increasing productivity levels. The experience of managers on firms' productivity is positive although this effect is insignificant. The level of economic growth and financial development in the economy a firm is operating in also affects its productivity. In table 34 country dummies are included to account for country differences and the results still remain the same. The lack of access to finance negatively affects firms' total factor productivity.

**Table 34: Base Regression Results (OLS): Whole Sample with Country Dummy**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable: Total Factor Productivity: Labour Cost and Material Cost (Log Value) | | | | |
| Overdraft | -0.337*** | -0.320*** | -0.131*** | -0.144*** |
| | (0.043) | (0.045) | (0.045) | (0.045) |
| Credit Line/Loan | -0.133*** | -0.112** | -0.010 | 0.167*** |
| | (0.043) | (0.046)) | (0.045) | (0.019) |
| Checking Account | -0.230*** | -0.224*** | -0.142*** | -0.135*** |
| | (0.052) | (0.053) | (0.053) | (0.052) |
| Moderate Obstacle | | 0.023 | 0.082* | 0.048 |
| | | (0.050) | (0.049) | (0.049) |
| Major Obstacle | | -0.128*** | -0.054 | -0.055 |
| | | (0.047) | (0.047) | (0.046) |
| Very Severe Obstacle | | -0.289*** | -0.189*** | -0.187*** |
| | | (0.051) | (0.050) | (0.050) |
| Small Firm | | | -0.825*** | -0.790*** |
| | | | (0.058) | (0.057) |
| Medium Firm | | | -0.448*** | -0.413*** |
| | | | (0.056) | (0.056) |
| Age of Firm (Log) | | | 0.120*** | 0.168*** |
| | | | (0.039) | (0.040) |
| Managerial Experience (Log) | | | 0.006 | -0.027 |
| | | | (0.025) | (0.025) |
| GDP Per Capita (Log) | | | | 0.136 |
| | | | | (0.108) |
| Domestic Credit | | | | 0.040*** |
| | | | | (0.005) |
| Observations | 5086 | 4836 | 4682 | 4682 |
| R-Squared | 0.039 | 0.048 | 0.103 | 0.123 |
| Country Dummy | YES | YES | YES | YES |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively

### 4.5.2: Robustness Checks

To access the robustness of the results above alternative measures of total factor productivity are used (capital is measured as net book value of machinery vehicles and equipment and labour is measured as the number of fulltime employees).

**Table 35: Base Regression Results (OLS): Whole Sample**

| Dependent Variable: TFP: No of Fulltime Employees and NBV of Machinery (Log Value) | |
|---|---|
| Variables | Coefficients |
| Overdraft | -0.174*** |
| | (0.048) |
| Credit Line/Loan | -0.079* |
| | (0.047) |
| Checking Account | 0.032 |
| | (0.061) |
| Moderate Obstacle | 0.018 |
| | (0.055) |
| Major Obstacle | -0.063 |
| | (0.053) |
| Very Severe Obstacle | -0.222*** |
| | (0.057) |
| Small Firm | -0.429*** |
| | (0.062) |
| Medium Firm | -0.179*** |
| | (0.060) |
| Age of Firm (Log) | -0.054 |
| | (0.045) |
| Managerial Experience (Log) | -0.063 |
| | (0.053) |
| GDP Per Capita (Log) | 0.015 |
| | (0.029) |
| Domestic Credit | 0.001** |
| | (0.001) |
| Observations | 3401 |
| R-Squared | 0.038 |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively

Table 35 present results using alternative measures and the results obtained still shows that the lack of access to finance negatively affects firms' productivity. Overdraft and credit line/loan are negatively significant at 1% and 10% respectively. This means that a 1% increase in firms with no overdraft facility would decrease productivity by approximately 17% and a 10% increase in firms with no credit line/loan would decrease productivity by 8%.

Further estimation is carried out to show how the effect of access to finance on firms' total factor productivity would differ based on the size and ownership of the firm (tables 36 and 37). Results showing only the coefficients of measures of access to finance and ranking of financial constraint is reported below.

**Table 36: Base Regression Results (OLS): Size of the Firms**

| | Small | Medium | Large |
|---|---|---|---|
| Dependent Variable: Total Factor Productivity: Labour Cost and Material Cost (Log Value) | | | |
| Overdraft | -0.138* | -0.178*** | -0.168* |
| | (0.075) | (0.065) | (0.088) |
| Credit Line/Loan | -0.129* | 0.054 | 0.080 |
| | (0.073) | (0.067) | (0.086) |
| Checking Account | -0.071** | -0.096 | -0.307 |
| | (0.064) | (0.120) | (0.198) |
| Moderate Obstacle | 0.146** | -0.084 | -0.032 |
| | (0.073) | (0.078) | (0.108) |
| Major Obstacle | -0.034 | -0.070 | -0.068 |
| | (0.064) | (0.078) | (0.123) |
| Very Severe Obstacle | -0.133** | -0.257*** | -0.387*** |
| | (0.067) | (0.092) | (0.143) |
| Observations | 2775 | 1380 | 681 |
| R-Squared | 0.023 | 0.089 | 0.204 |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively

Table 36 shows that the productivity of all sizes of firms is negatively affected by the lack of access to overdraft facilities. However, the lack of access to credit line/loan and checking account significantly and negatively affects the productivity of only small firms. Also all sizes of firms who rank finance as a very severe obstacle experience a decrease in their productivity.

**Table 37: Base Regression Results (OLS): Ownership of the Firms**

| | Traded Shares | Non-Traded Shares | Sole Proprietor | Partnership | Limited Partnership |
|---|---|---|---|---|---|
| Dependent Variable: Total Factor Productivity: Labour Cost and Material Cost (Log Value) | | | | | |
| Overdraft | -0.054 | -0.121** | -0.150* | -0.247* | 0.024 |
| | (0.392) | (0.050) | (0.086) | (0.144) | (0.130) |
| Credit Line/Loan | 0.235 | -0.030 | -0.077 | -0.074 | -0.015 |
| | (0.408) | (0.052) | (0.087) | (0.157) | (0.137) |
| Checking Account | 0.803 | 0.192** | -0.113* | 0.193 | -0.242 |
| | (0.673) | (0.097) | (0.065) | (0.151) | (0.244) |
| Moderate Obstacle | 0.703 | 0.201*** | 0.163* | 0.092 | -0.107 |
| | (0.464) | (0.064) | (0.085) | (0.163) | (0.160) |
| Major Obstacle | 1.237** | 0.076 | 0.043 | -0.219 | 0.172 |
| | (0.534) | (0.064) | (0.074) | (0.149) | (0.181) |
| Very Severe Obstacle | -0.512 | 0.059 | -0.095 | -0.113 | -0.343 |
| | (0.817) | (0.074) | (0.076) | (0.148) | (0.219) |
| Observations | 81 | 1525 | 2276 | 466 | 414 |
| R-Squared | 0.018 | 0.013 | 0.008 | 0.022 | 0.013 |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively

Table 37 shows that lack of access to finance has an insignificant effect on incorporations with traded shares and limited partnerships. However, the productivity of sole proprietorships is negatively affected by the lack of access to overdraft facilities and checking/saving accounts. Although, the lack of access to credit line/loan facilities has a negative effect it is insignificant. Also, the productivity of incorporations with non-traded shares and partnerships are negatively affected by the lack of access to overdraft facilities.

### 4.5.3: OLS Estimates: Labour Productivity Model

In table 38 labour productivity is used as a measure of firms' productivity. Labour productivity is derived by dividing the total annual sales by the number of permanent, full-time employees. The results show that lack of access to finance increases labour productivity. This is because small and informal firms often have very low labour productivity and increasing debt or leverage tends to negatively affect labour productivity in firms with relatively low labour productivity. This is similar to the results obtained by Nunes et al (2007) and Nucci et al. (2005),

access to debt financing would decrease the productivity of low and medium-productivity firms, but would increase the productivity of high-productivity firms.

**Table 38: Base Regression Results (OLS): Whole Sample**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable: Labour Productivity = Total Sales / Number of Employees (Log Value) | | | | |
| Overdraft | 0.683*** | 0.644*** | 0.177*** | 0.169*** |
| | (0.023) | (0.023) | (0.018) | (0.019) |
| Credit Line/Loan | 0.372*** | 0.374*** | 0.168*** | 0.167*** |
| | (0.024) | (0.025) | (0.019) | (0.019) |
| Checking Account | 0.209*** | 0.211*** | -0.018 | -0.021 |
| | (0.026) | (0.026) | (0.020) | (0.020) |
| Moderate Obstacle | | 0.139*** | 0.065*** | 0.056*** |
| | | (0.027) | (0.020) | (0.021) |
| Major Obstacle | | 0.256*** | 0.093*** | 0.082*** |
| | | (0.025) | (0.019) | (0.020) |
| Very Severe Obstacle | | 0.359*** | 0.118*** | 0.105*** |
| | | (0.027) | (0.021) | (0.021) |
| Small Firm | | | 2.046*** | 2.045*** |
| | | | (0.025) | (0.026) |
| Medium Firm | | | 1.101*** | 1.101*** |
| | | | (0.026) | (0.027) |
| Age of Firm (Log) | | | -0.247*** | -0.243*** |
| | | | (0.016) | (0.017) |
| Managerial Experience (Log) | | | -0.024** | -0.027** |
| | | | (0.010) | (0.011) |
| GDP Per Capita (Log) | | | | -0.015 |
| | | | | (0.010) |
| Domestic Credit | | | | -0.0002 |
| | | | | (0.00022) |
| Observations | 11,387 | 10,886 | 9824 | 9824 |
| R-Squared | 0.1411 | 0.1590 | 0.5477 | 0.548 |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively

### 4.5.4 IV-GMM: Instrumental Variable Model

This study uses a two-stage efficient GMM estimator and the results without (column1) and with (column 2) country dummies are presented in table 39.

**Table 39: IV-GMM: Instrumental Variable Model**

| Dependent Variable: Total Factor Productivity: Labour Cost and Material Cost (Log Value) | | |
|---|---|---|
| Variables | 1 | 2 |
| Access | -2.57*** | -4.66*** |
| | (0.734) | (1.110) |
| Moderate Obstacle | -0.049 | -0.109 |
| | (0.066) | (0.081) |
| Major Obstacle | -0.038 | - 0.052 |
| | (0.060) | (0 075) |
| Very Severe Obstacle | -0.203*** | - 0.246*** |
| | (0.065) | (0.082) |
| Small Firm | -0.324** | -0.001 |
| | (0.173) | (0.228) |
| Medium Firm | -0.203** | -0.003 |
| | (0.114) | (0.148) |
| Age of Firm (Log) | 0.101** | 0.172** |
| | (0.051) | (0.065) |
| Managerial Experience (Log) | -0.105*** | -0.191*** |
| | (0.039) | (0.052) |
| GDP Per Capita (Log) | -0.052 | 0.178 |
| | (0.035) | (0.181) |
| Domestic Credit | -0.005*** | 0 045*** |
| | (0.0006) | (0.009) |
| Country Dummy | NO | YES |
| Observations | 5161 | 5161 |
| R-Squared | -0.2303 | -0.8699 |
| Endogeneity | 15.37 | 34.79 |
| P-value | 0.0001 | 0.0000 |
| Hansen-Sargan | 0.478 | 0.335 |
| P-value | 0.4892 | 0.5626 |

Note: Endogeneity tests of the endogenous variable are implemented under the null hypothesis that the specified variable can be treated as exogenous. Endogenous explanatory variable (access to credit) is instrumented using the type of ownership and the gender of owner(s). The Hansen-Sargan's statistic tests the validity of the instruments used, and rejection implies that the instruments are not valid. Standard errors are reported in parenthesis, ***, **,* denotes significance levels at 1%, 5% and 10% respectively.

To test and control for potential endogeneity bias, following Gatti and Love (2006), we construct a variable (ACCESS) which takes a value of one if the firm does not have either a credit line, overdraft, or a checking account and zero otherwise. ACCESS is constructed by combining credit line, overdraft, and checking account as the three variables represent firm's access to short and long term finance. ACCESS is instrumented using the type of ownership and the gender of owner(s). The Hansen-Sargan's over identification test shows that the instruments are valid.

The results show that the lack of access to finance reduces the level of firms' productivity with and without country dummy. Also, firms who view finance as a very severe obstacle experience a reduction in their level of productivity by 20% and 19% respectively. The productivity of small and medium sized firms is negatively affected in the regression without country dummies. The test for endogeneity shows that ACCESS is endogenous and we cannot reject the null hypothesis. Therefore, although the results obtained for the main explanatory variables are robust with the OLS method, the IV-GMM method gives a more reliable and consistent results.

### 4.5.5: Stochastic Frontier Model

To contribute to existing literature, firms' productivity is also measured using stochastic frontier Cobb-Douglas and translog production functions. The result of the log likelihood ratio test shows that the translog production function is the best specification to measure firms' productivity:

| | |
|---|---|
| Log Likelihood-ratio test | LR chi2 (3) = 2285.99 |
| (Assumption: Cobb-Douglas nested in translog) | Probability > chi2 = 0.000 |

Tables 40[61] below shows results for the trans-logarithmic production functions. The results show that both log of labour cost and material cost are statistically significant at the conventional significance level of 1%, implying the suitability of the translog function for the firms studied. The results obtained for the measures of lack of access to finance on firms' productivity are robust to those for the OLS and IV-GMM estimates. The lack of access to overdraft and credit line/loan facilities negatively affects firms' productivity and reduces firms' productivity by 19% and 36% respectively. Also, firms who rank finance as a moderate and major experience a decrease in their productivity levels. Small and medium sized firms also experience decreasing levels of productivity by approximately 39% and 27% respectively.

[61] Appendix 11: Cobb-Douglas results.

**Table 40: Stochastic Frontier Normal/Half Normal Model Regression**

| Dependent Variable: Translog Production Function | |
|---|---|
| Variables | Coefficients |
| Material Cost ( $\beta_1$ ) (Log) | 0.435*** |
| | (0.034) |
| Labour Cost ($\beta_2$ ) (Log) | 0.798*** |
| | (0.036) |
| Material Cost2 ((1/ 2) $\beta_1$ $\beta_1$ ) | 0.194*** |
| | (0.011) |
| Labour Cost2 ((1/ 2) $\beta_2$ $\beta_2$ ) | 0.176*** |
| | (0.014) |
| Output = $\beta_1$ * $\beta_2$ | -0.194*** |
| | (0.012) |
| Overdraft | -0.193** |
| | (0.096) |
| Credit Line/Loan | -0.356*** |
| | (0.091) |
| Checking Account | 0.278 |
| | (0.215) |
| Moderate Obstacle | -0.279* |
| | (0.150) |
| Major Obstacle | -0.367** |
| | (0.168) |
| Very Severe Obstacle | 0.050 |
| | (0.157) |
| Small Firm | -0.386*** |
| | (0.145) |
| Medium Firm | -0.271* |
| | (0.141) |
| Age of Firm (Log) | -0.208** |
| | (0.104) |
| Managerial Experience (Log) | 0.068 |
| | (0.068) |
| Observations | 4682 |
| Log Likelihood | -5334.0593 |
| Wald Chi2 | 1914336.84 |
| Probability > chi2 | 0.0000 |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively

### 4.6 Conclusion and Policy Implication

Although there exists a limited literature on the relationship between finance and firms' productivity, the evidence of this relationship is almost non-existent for African countries. This chapter contributes to the literature by providing empirical evidence of the link between finance and firms' productivity. To do this, cross-sectional firm level data from World Bank Enterprise Survey data for seventeen (17) African countries are used. Empirical analysis is conducted on the effect of lack of access to internal and external finance on firms' productivity. Three constructed dummy variables measure access to finance: the absence of overdraft facilities, credit line/loan facilities, and checking/savings account. We capture firms' productivity using three measures: labour productivity, total factor productivity (TFP), and stochastic frontier translog functions.

For the whole sample, the results obtained are robust for TFP models and stochastic frontier translog functions. The lack of access to finance, especially overdraft facilities negatively affects the productivity of firms in Africa. Also, smaller firms and sole-proprietorships are mostly affected because they have less access to finance. In addition, firm characteristics such as size and age of firm affect its productivity. The level of economic growth and development of the financial system a firm operates in affects its productivity and ability to access finance. However, labour productivity (output per unit of labour) is negatively affected by access to finance because small and medium firms (92% of firms in this study) have low labour productivity which is negatively affected by increasing access to debt financing.

The results obtained have important policy implications. First, they are consistent with the idea or hypothesis that total factor productivity (which attempts to capture the relative efficiency of the usage of capital and labour inputs) is negatively affected by firms' inability to access finance in Africa. Second, firm characteristics such as size, age, and managerial experience can influence firms' ability to access finance and its effect on productivity. These points imply that the sensitivities of firm-level productivity to finance suggest that access to external finance is still not sufficiently wide-spread in Africa. Further development of a balanced financial system is required. To reduce the pressure on banks, stock and bond markets in particular should be equally developed. This would ensure that more finance is channelled towards those firms whose productivity is highly dependent on the availability of finance irrespective of their characteristics. If this were to happen, these firms would be able to increase their investments in productivity-enhancing activities, which would benefit long-term economic growth.

## Chapter 5: CONCLUSION

The continent of Africa is poised to become one of the next frontier of economic development and investment destination. Africa has also recorded increasing economic growth rate in spite of the global economic uncertainties and slowdown. However, Africa's economy has not been able to translate these prospects and impressive economic growth into becoming a diversified economy which creates jobs, and fosters faster social development (UNECA, 2013). The continent of Africa remains the least developed and poorest region in the world. Africa still lags behind regarding socio-economic progress when compared to other developing continents with two-thirds of Africans lacking access to adequate infrastructure, electricity, water, and food. Various social and economic challenges such as political instability, corruption, ethnic conflicts, and the lack of adequate infrastructure are considered to be hampering sustainable growth and development in Africa.

The role of the financial system in enhancing sustainable economic growth, improving private sector activity, and alleviating poverty have been provided in existing theoretical and empirical literature (Levine (1997); Ndikumana (2001); Ndulu (2007); Goodhart (2016). Well-functioning and efficient financial systems promote sustainable economic growth by increasing the allocative efficiency of savings, pooling, and mobilizing resources, diversifying and expanding investment opportunities, and providing effective payment systems that ease the process of exchanging goods and services (Ndulu 2007; Goodhart 2016). However, Africa's financial systems remain one of the least developed and have not fully contributed to promoting sustainable economic growth and development. The thesis focused on three aspects of the financial system: financial development and integration at the macro level, and access to finance at the micro level.

Chapter 2 presented the first empirical study that examined the role of financial development in enhancing the effect of foreign direct investment on economic growth. The major contribution of this study is the application of the bank-based versus market-based debate to determine the most appropriate financial system that would improve this effect. To capture overall financial development, bank-based financial development, and stock market development various measures of financial development were used to construct three separate variables using principal component analysis and the financial index formula. To examine the role of financial development in the FDI-growth Nexus, this study adopted the methodology

proposed by Adam et al., (2002) and Rajan and Zingales (1996). The three measures of financial development are made to interact with the measure of FDI and estimated using the Dynamic fixed effect (DFE) model developed by Pesaran et al., (1999).

The results of the analysis show that the financial system, and notably the level of financial development plays an important role in enhancing the effect of FDI on economic growth in the host country. The effect of FDI on economic growth was positive but insignificant when measures of financial development are excluded. However, when measures of financial development were factored in via interaction terms, the effect of FDI on economic growth was positive and significant. Also, this study supports the financial service view that states that it is the quality of the services provided by the financial institutions themselves that are of importance and not the form of their delivery. Analysis of results indicated that developing the overall financial system of African countries would be beneficial in comparison to developing either the banks or financial markets alone. More importantly, the improvement of the size of Africa's financial systems needs to be prioritized in policy making.

The findings of this study provide important suggestions for policy makers. Firstly, the underdeveloped nature of Africa's financial system could be limiting its ability to accrue fully all the benefits associated with FDI inflow. Foreign and domestic investors have limited access to basic financial services therefore, hindering Africa's economy from benefiting from technology spillovers, spillover of knowledge, and capital formation associated with FDI inflow. Therefore, policy makers should promote the development of well-functioning and efficient financial systems that would provide investors, most importantly domestic investors with financial services that would enhance their ability to take full advantage of the inflow of FDI. Secondly, besides the underdeveloped nature of Africa's financial system, focusing on a particular system (i.e. banks) increases the limitations imposed by the financial system. Although, the banking system of most African countries are more established than the stock markets this study shows that banks and stock markets should be given equal priority. Instead of supporting policy tools that support the development of only banks or stock markets, policy makers should focus on implementing structural reforms that foster the development of a balanced financial system consisting of efficient and well-functioning banks and stock markets.

The second empirical study presented in Chapter 3 measures the speed and degree of financial integration in Africa's Regional Economic Communities (RECs) using beta and sigma convergence respectively. The study explored the potential contribution of regional financial

integration towards financial development and economic growth in Africa. The crisis in the Eurozone according to Mario Draghi, the president of the ECB should be a model that shows the effect of disregarding the importance of financial integration for a sustainable and well-functioning monetary union. Africa's RECs have had to postpone the dates set for monetary union formation several times and are failing to meet their targets. This has led to loss of credibility in the process and withdrawal of support from market participants and the general public (Mougani, 2014).

The results from this empirical analysis show that although regional financial integration is taking place, the rate of integration in Africa's RECs is slow, uneven, and Africa's RECs may not be able to fully benefit from the process of RFI. The process of regional financial integration in Africa is mainly challenged by overlapping memberships, numerous sub-regional committees, and diverging macroeconomic performance. The level of regional financial integration measured by Africa's RECs is almost similar to the rate of integration in the Eurozone before the formation of the Eurozone. From the results obtained, EAC has made the most progress towards RFI, followed by ECOWAS, then SADC, while COMESA records the least progress towards RFI. The level of financial integration recorded can account for why Africa's RECs have failed to meet their targets and keep postponing the launch dates of single currency adoption and monetary union formation.

This study has some potential limitations. Firstly, the study is limited by data availability in Africa. Regional financial integration is measured using 3-months interbank interest rates. Given data availability, RFI could have been measured in the stock market using cross-listing of stocks and in the bond market using interest rates on government bonds. Secondly, some members of the RECs included in this analysis are excluded due to data availability. However, this study contributes to existing literature as it fills the gap of limited empirical studies on regional financial integration measurement in Africa. It also provides a theoretical analysis of the potential effects of regional financial integration on financial development and economic growth in Africa.

From the results obtained policy makers are provided with some suggestions. First, Africa's RECs should endeavour to abide strictly by the framework of RFI provided by the Africa Development Bank. Second, presently Africa's RECs should focus on promoting and strengthening RFI in their regions. The agenda of the single currency and monetary union formation should be implemented cautiously and achieved with the right motive and structure.

Third, to promote RFI overlapping membership and numerous sub-regional committees should be eliminated. Member countries should ensure that they achieve converging fiscal and macroeconomic performance.

In the third empirical analysis presented in chapter 4, using cross-sectional firm-level data from the World Bank Enterprise Survey, the effect of access to finance on firms' productivity is analysed. From existing theoretical and empirical literature access to finance has been considered to be one of the important factors in influencing firms' real activities and in promoting aggregate growth. The study measures how firms' access to overdraft facilities, checking account, and credit line affect its productivity. This study contributes to existing literature. First, empirical studies on this relationship are almost non-existent for African countries. Second, this study mainly contributes to existing literate by using direct measures of access to both internal and external finance. Third, unlike existing studies that measure productivity using total factor productivity this study measured productivity using TFP, labour productivity, and the stochastic frontier Cobb-Douglas and translog model.

The results of this study indicate that firms' productivity is negatively affected by the lack of access to internal and external finance. Notably, the lack of access to overdraft facilities negatively affects firms' productivity. Also, firm-characteristics influences the ability of firms to obtain external finance. In this study, smaller firms and sole-proprietorships experience more restrictions in obtaining finance and are mostly affected by the lack of access to finance. The following suggestions could be useful to policy makers. First, external finance is still not sufficiently available to a wide range of market participant in Africa. Second, Africa requires balanced and efficient financial systems. Notably, stock and bond markets should be equally developed to reduce the pressure on banks. This would ensure that firms are able to access finance as it when due irrespective of their characteristics. As a result, firms' investments in productivity-enhancing activities would increase and subsequently long-term economic growth.

In conclusion, this thesis presented empirical studies that provide insights into the importance of the financial system at the macro and micro level in Africa. In this regard, the results presented in this thesis provide suggestions that can be used by policy makers in formulating policies that fosters a balanced financial system that is well developed and fully integrated. Also, this thesis fills the gap in the existing literature on Africa's financial system by providing empirical evidence on the most appropriate financial system required, measurement of regional financial integration in Africa's RECs, and the effect of access to finance on firms' productivity.

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## APPENDIX

**Appendix 1: Descriptive Statistics:** The summary statistics of the variables used in chapter 2.

| Variable | Obs | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|---|
| GDP per capital Growth Rate | 252 | 8.4 | 0.64 | 7.15 | 9.63 |
| FDI | 252 | 2.35 | 2.62 | -6.89 | 12.01 |
| Liquid liabilities ratio | 252 | 41.37 | 25.02 | 12.51 | 112.83 |
| Private Sector Credit Ratio | 252 | 32.65 | 31.41 | 3.69 | 149.77 |
| Financial system deposit ratio | 252 | 35.71 | 22.71 | 8.11 | 95.84 |
| Market Capitalization ratio | 252 | 38.21 | 56.91 | 1.16 | 433.09 |
| Listed domestic companies | 252 | 0.075 | 0.11 | 0 | 472 |
| Stock traded total value ratio | 252 | 10.22 | 13.22 | 0.013 | 64.62 |
| Stock traded turnover ratio | 252 | 12.02 | 56.45 | 0.001 | 754.02 |
| FD liquidity | 252 | 2.98 | 1.58 | -0.15 | 6.90 |
| FD Size | 252 | 99.26 | 31.49 | 13.89 | 231.09 |
| Structural Aggregate | 252 | -1.52 | 1.05 | -4.67 | 2.54 |
| Inflation | 252 | 220.85 | 1894.27 | -0.80 | 24411.03 |
| Government Expenditure | 252 | 16.98 | 6.55 | 2.04 | 51.12 |
| Exports | 252 | 37.95 | 15.61 | 15.05 | 100.94 |
| Imports | 252 | 40.64 | 17.33 | 17.30 | 101.90 |
| Infrastructure | 252 | 4.96 | 6.36 | 0.29 | 29.84 |
| Population Growth | 252 | 1.93 | 0.76 | 0.10 | 3.41 |

**Appendix 2: Panel Unit Root Test: Maddala and Wu (1999)**

| Maddala and Wu (1999) Fisher test (Without Trend) | | | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **Lags** | 0 | 1 | 2 | 3 | 4 |
| Log GDPPP | Chi_sq | 2.748 | 6.643 | 3.353 | 2.453 | 1.062 |
| | p-value | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| FDI | Chi_sq | 103.229 | 56.684 | 56.646 | 20.589 | 62.759 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.663 | 0.000 |
| Pop. Growth | Chi_sq | 68.049 | 126.166 | 66.145 | 44.835 | 26.877 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.006 | 0.310 |
| Govt. Expenditure | Chi_sq | 45.093 | 55.972 | 49.364 | 42.104 | 39.371 |
| | p-value | 0.006 | 0.000 | 0.002 | 0.013 | 0.025 |
| Inflation | Chi_sq | 68.804 | 47.293 | 35.834 | 47.499 | 57.832 |
| | p-value | 0.000 | 0.003 | 0.057 | 0.003 | 0.000 |
| Infrastructure | Chi_sq | 19.436 | 62.621 | 29.268 | 46.163 | 20.900 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.663 | 0.000 |
| Exports | Chi_sq | 32.399 | 25.637 | 25.601 | 36.899 | 43.182 |
| | p-value | 0.117 | 0.372 | 0.374 | 0.0045 | 0.009 |
| Imports | Chi_sq | 46.198 | 42.137 | 40.742 | 28.807 | 43.182 |
| | p-value | 0.004 | 0.012 | 0.018 | 0.227 | 0.411 |
| Financial System | Chi_sq | 6.387 | 11.349 | 17.916 | 12.227 | 11.616 |
| | p-value | 1.000 | 0.986 | 0.807 | 0.977 | 0.984 |
| Findex | Chi_sq | 21.647 | 26.206 | 16.662 | 37.144 | 24.152 |
| | p-value | 0.600 | 0.343 | 0.863 | 0.042 | 0.453 |
| Financial Aggregate | Chi_sq | 21.213 | 39.222 | 30.895 | 21.545 | 11.747 |
| | p-value | 0.626 | 0.026 | 0.157 | 0.606 | 0.983 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Structural Aggregate | Chi_sq | 19.009 | 42.247 | 47.531 | 41.285 | 37.102 |
| | p-value | 0.751 | 0.012 | 0.003 | 0.015 | 0.043 |
| Interaction 1 | Chi_sq | 99.269 | 39.360 | 45.660 | 32.332 | 72.240 |
| | p-value | 0.000 | 0.025 | 0.005 | 0.119 | 0.000 |
| Interaction 2 | Chi_sq | 73.650 | 44.308 | 44.327 | 15.359 | 31.186 |
| | p-value | 0.000 | 0.007 | 0.007 | 0.910 | 0.148 |
| Interaction 3 | Chi_sq | 82.846 | 46.939 | 49.820 | 16.726 | 32.794 |
| | p-value | 0.000 | 0.003 | 0.001 | 0.860 | 0.108 |

**Appendix 3: Panel Unit Root Test: Pesaran (2007)**

| Pesaran (2007) CIPS test (Without Trend) | | | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **Lags** | 0 | 1 | 2 | 3 | 4 |
| Log GDPPP | Zt-bar | 0.581 | 0.078 | 1.506 | 0.542 | 1.288 |
| | p-value | 0.719 | 0.531 | 0.934 | 0.706 | 0.901 |
| FDI | Zt-bar | -5.332 | -2.476 | -0.855 | 0.713 | -0.276 |
| | p-value | 0.000 | 0.007 | 0.196 | 0.762 | 0.391 |
| Pop. Growth | Zt-bar | -0.189 | -4.564 | 1.425 | 5.361 | 6.219 |
| | p-value | 0.425 | 0.000 | 0.923 | 1.000 | 1.000 |
| Govt. Expenditure | Zt-bar | -0.851 | -0.816 | 0.353 | 0.941 | 2.313 |
| | p-value | 0.197 | 0.207 | 0.638 | 0.827 | 0.909 |
| Inflation | Zt-bar | -2.092 | -1.476 | -0.284 | 0.736 | 1.872 |
| | p-value | 0.018 | 0.070 | 0.388 | 0.231 | 0.969 |
| Infrastructure | Zt-bar | -0.201 | -2.371 | -1.275 | -1.586 | 1.924 |
| | p-value | 0.420 | 0.009 | 0.101 | 0.056 | 0.973 |
| Exports | Zt-bar | 0.229 | 0.892 | 1.060 | 0.081 | -1.784 |
| | p-value | 0.591 | 0.814 | 0.856 | 0.532 | 0.037 |
| Imports | Zt-bar | -0.997 | -0.715 | -0.336 | 0.930 | 1.611 |
| | p-value | 0.159 | 0.237 | 0.368 | 0.824 | 0.946 |
| Financial System | Zt-bar | 1.205 | 0.044 | 0.351 | 0.079 | 0.643 |
| | p-value | 0.886 | 0.518 | 0.637 | 0.531 | 0.740 |
| Findex | Zt-bar | -0.262 | -1.039 | -0.697 | -2.304 | 0.861 |
| | p-value | 0.397 | 0.149 | 0.243 | 0.011 | 0.805 |
| Financial Aggregate | Zt-bar | -0.084 | -2.680 | -0.468 | 0.126 | 1.420 |
| | p-value | 0.467 | 0.004 | 0.320 | 0.550 | 0.922 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Structural Aggregate | Zt-bar | -0.828 | -2.432 | -0.799 | 0.599 | 0.087 |
| | p-value | 0.204 | 0.008 | 0.212 | 0.726 | 0.535 |
| Interaction 1 | Zt-bar | -3.557 | -1.284 | 0.609 | 1.406 | 0.850 |
| | p-value | 0.000 | 0.100 | 0.729 | 0.920 | 0.802 |
| Interaction 2 | Zt-bar | -6.021 | -3.335 | -1.177 | 0.784 | 0.437 |
| | p-value | 0.000 | 0.000 | 0.120 | 0.783 | 0.669 |
| Interaction 3 | Zt-bar | 0.526 | -2.438 | -0.743 | -0.892 | 1.649 |
| | p-value | 0.700 | 0.007 | 0.229 | 0.186 | 0.950 |

**Appendix 4: Listing of RECs and Sub groups**

| **Main RECs recognised by the AU as pillars of the AEC*** | **Subgroups** |
|---|---|
| Community of Sahel-Saharan States (CEN-SAD) | |
| Common Market for Eastern and Southern Africa (COMESA) | |
| East African Community (EAC) | |
| Economic Community of Central African States (ECCAS/ CEEAC) | Economic and Monetary Community of Central Africa (CEMAC) |
| Economic Community of West African State (ECOWAS) | West African Economic and Monetary Union (WAEMU)<br>West African Monetary Union (WAMZ) |
| Intergovernmental Authority on Development (IGAD) | |
| Southern African Development Community (SADC) | Southern African Customs Union (SACU)<br>Common Monetary Area (CMA) |
| Arab Maghreb Union (AMU/UMA) | |

Source: (UNECA, 2008).

**Appendix 5: Members of the European Union and year of entry**

| | |
|---|---|
| Austria (1995) | Luxembourg (1958) |
| Belgium (1958) | Malta (2004) |
| Bulgaria (2007) | Netherlands (1958) |
| Croatia (2013) | Poland (2004) |
| Cyprus (2004) | Portugal (1986) |
| Czech Republic (2004) | Romania (2007) |
| Denmark (1973) | Slovakia (2004) |
| Estonia (2004) | Slovenia (2004) |
| Finland (1995) | Spain (1986) |
| France (1958) | Sweden (1995) |
| Germany (1958) | United Kingdom (1973) |
| Greece (1981) | |
| Hungary (2004) | |
| Ireland (1973) | |
| Italy (1958) | |
| Latvia (2004) | |
| Lithuania (2004) | |

**Appendix 6: Descriptive Statistics:** The summary statistics of the variables used in chapter 4

| Variable | Mean | Std. Dev. | Minimum | Maximum | Obs |
|---|---|---|---|---|---|
| *A. TFP calculation* | | | | | |
| Net Book Value (logs) | 12.7418 | 3.796 | -6.77 | 28.36 | 4206 |
| Sales (logs) | 12.1949 | 3.0511 | -4-19 | 27.58 | 23989 |
| Material cost (logs) | 11.6186 | 4.1770 | -5.44 | 26.91 | 6275 |
| Labour cost (logs) | 10.7085 | 3.8540 | -5.44 | 26.30 | 12321 |
| *B. Firm-level characteristics* | | | | | |
| Age of Firm (logs) | 2.6665 | 0.6404 | 0 | 4.897 | 8742 |
| Managerial Experience (logs) | 2.3030 | 0.7490 | 0 | 5.707 | 25072 |
| Dummy = 1 if firm has no overdraft | 0.7883 | 0.4085 | 0 | 1 | 23253 |
| Dummy =1 if firm has no loan | 0.8325 | 0.3734 | 0 | 1 | 24900 |
| Dummy = 1 if firm has no account | 0.1525 | 0.3595 | 0 | 1 | 14978 |
| Dummy = 1 if firm size is small | 0.6553 | 0.4752 | 0 | 1 | 23470 |
| Dummy = 1 if firm size is medium | 0.2631 | 0.4403 | 0 | 1 | 23470 |
| Dummy = 1 if firm size is large | 0.0814 | 0.2735 | 0 | 1 | 23470 |
| Dummy = 1 if Manufacturing sector | 0.4979 | 0.5000 | 0 | 1 | 16607 |
| Dummy = 1 if Retail Sector | 0.2303 | 0.4210 | 0 | 1 | 16607 |
| Dummy = 1 if Other services | 0.2716 | 0.4448 | 0 | 1 | 16607 |
| Dummy = 1 if finance is no obstacle | 0.2080 | 0.4059 | 0 | 1 | 24730 |
| Dummy = 1 if finance is Minor obstacle | 0.1569 | 0.3637 | 0 | 1 | 24730 |
| Dummy = 1 if finance is Moderate obstacle | 0.1794 | 0.3837 | 0 | 1 | 24730 |
| Dummy = 1 if finance is Major obstacle | 0.2486 | 0.4322 | 0 | 1 | 24730 |
| Dummy =1 if finance is Very Severe obstacle | 0.2068 | 0.4050 | 0 | 1 | 24730 |
| *C. Country-level characteristics* | | | | | |
| GDP per capital (log) | 7.470 | 0.9214 | 5.5314 | 8.7393 | 25946 |
| Private Credit (% GDP) | 30.053 | 30.6356 | 3.9223 | 160.125 | 25946 |

**Appendix 7: Percentage of Firms Using finance for Investment**

| Country | Year | Obs. | Internal Funds | Bank Borrowings | Non-Bank Borrowings | Credit Purchases | Others |
|---|---|---|---|---|---|---|---|
| Angola | 2006 | 425 | 33.65% | 70.12% | 0.24% | 1.18% | 72.47% |
| | 2010 | 360 | 96.67% | 66.39% | 61.67% | 64.44% | 63.33% |
| Botswana | 2006 | 342 | 42.98% | 63.74% | 0.58% | 5.26% | 54.97% |
| | 2010 | 268 | 86.94% | 55.97% | 32.84% | 37.31% | 34.33% |
| Burkina Faso | 2006 | 139 | 57.55% | 23.02% | 2.16% | 3.60% | 0% |
| | 2009 | 394 | 92.64% | 63.45% | 53.81% | 55.08% | 53.30% |
| Cameroon | 2006 | 171 | 73.84% | 29.07% | 14.53% | 19.77% | 0% |
| | 2009 | 363 | 95.59% | 68.87% | 59.78% | 67.49% | 58.68% |
| DRC | 2010 | 359 | 98.05% | 58.50% | 56.55% | 63.79% | 58.22% |
| | 2013 | 529 | 98.68% | 60.30% | 58.41% | 62.95% | 62.19% |
| Ghana | 2007 | 494 | 95.95% | 56.28% | 48.58% | 52.43% | 0% |
| | 2013 | 585 | 93.61% | 59.44% | 51.39% | 54.44% | 51.67% |
| Kenya | 2007 | 657 | 90.56% | 60.43% | 42.47% | 48.71% | 0% |
| | 2013 | 781 | 88.60% | 73.37% | 55.06% | 60.18% | 55.57% |
| Malawi | 2009 | 150 | 87.33% | 54.67% | 35.33% | 38.67% | 36% |
| | 2014 | 400 | 89.87% | 71.32% | 62.14% | 67.88% | 63.86% |
| Mali | 2007 | 490 | 34.89% | 1.62% | 0.48% | 1.45% | 65.27% |
| | 2010 | 360 | 90% | 64.72% | 58.33% | 61.39% | 57.50% |
| Niger | 2005 | 125 | 76.80% | 16% | 0% | 2.40% | 0% |
| | 2009 | 150 | 94% | 49.33% | 42% | 44% | 42% |
| Nigeria | 2007 | 3782 | 98.95% | 61.33% | 60.24% | 63.26% | 0% |
| | 2009 | 6314 | 98.57% | 56.98% | 48.46% | 51.06% | 0% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2014 | 2360 | 65.02% | 45.40% | 44.66% | 49.93% | 77.13% |
| Rwanda | 2006 | 182 | 51.42% | 15.57% | 1.42% | 3.77% | 3.77% |
| | 2011 | 241 | 92.95% | 66.39% | 52.28% | 56.43% | 53.53% |
| Senegal | 2003 | 262 | 85.88% | 38.93% | 13.74% | 16.41% | 0% |
| | 2007 | 506 | 23.84% | 3.68% | 1.60% | 0.80% | 0% |
| South Africa | 2003 | 603 | 71.64% | 24.21% | 0% | 11.94% | 0% |
| | 2007 | 937 | 34.34% | 14% | 0.57% | 3.97% | 0% |
| Tanzania | 2006 | 419 | 95.94% | 53.70% | 45.11% | 46.06% | 49.64% |
| | 2013 | 813 | 83.64% | 64.21% | 57.69% | 57.32% | 58.79% |
| Uganda | 2006 | 561 | 95.20% | 64.12% | 57.73% | 59.50% | 59.58% |
| | 2013 | 762 | 94.36% | 74.15% | 69.69% | 71.52% | 69.69% |
| Zambia | 2007 | 485 | 96.49% | 67.56% | 62.81% | 64.67% | 0% |
| | 2013 | 720 | 93.61% | 64.03% | 58.61% | 60.56% | 61.25% |

Source: Author's estimates using ES data

**Appendix 8: Percentage of Firms Using finance for Working Capital**

| Country | Year | Obs. | Internal Funds | Bank Borrowings | Non-Bank Borrowings | Credit Purchases | Others |
|---|---|---|---|---|---|---|---|
| Angola | 2006 | 425 | 93.41% | 3.76% | 0.47% | 43.53% | 18.59% |
| | 2010 | 360 | 91.67% | 12.50% | 1.11% | 6.94% | 6.11% |
| Botswana | 2006 | 342 | 94.44% | 19.59% | 2.05% | 69.88% | 8.19% |
| | 2010 | 268 | 86.94% | 33.58% | 1.87% | 32.46% | 7.84% |
| Burkina Faso | 2006 | 139 | 95.68% | 19.42% | 0.72% | 45.32% | 21.58% |
| | 2009 | 394 | 90.10% | 33.76% | 8.88% | 18.27% | 9.14% |
| Cameroon | 2006 | 171 | 90.70% | 43.02% | 6.40% | 43.60% | 33.14% |
| | 2009 | 363 | 91.74% | 42.15% | 20.66% | 44.35% | 22.04% |
| DRC | 2010 | 359 | 97.73% | 12.26% | 6.13% | 17.55% | 11.14% |
| | 2013 | 529 | 99.05% | 8.70% | 4.91% | 15.88% | 14.56% |
| Ghana | 2007 | 494 | 99.19% | 16.19% | 4.25% | 73.08% | 2.02% |
| | 2013 | 585 | 95.28% | 23.47% | 5.28% | 33.75% | 7.08% |
| Kenya | 2007 | 657 | 97.72% | 36.07% | 2.89% | 83.71% | 11.26% |
| | 2013 | 781 | 83.74% | 43.79% | 8.07% | 39.31% | 8.83% |
| Malawi | 2009 | 150 | 91.33% | 41.33% | 4.67% | 28% | 5.33% |
| | 2014 | 400 | 76.67% | 27.34% | 7.84% | 28.30% | 14.34% |
| Mali | 2007 | 490 | 99.35% | 4.68% | 3.23% | 64.14% | 2.10% |
| | 2010 | 360 | 83.61% | 23.61% | 6.11% | 11.94% | 2.78% |
| Niger | 2005 | 125 | 96% | 26.40% | 0% | 15.20% | 3.2% |
| | 2009 | 150 | 90% | 34% | 1.33% | 30% | 2% |
| Nigeria | 2007 | 3782 | 98.37% | 4.27% | 0.29% | 75.58% | 15.33% |
| | 2009 | 6314 | 99.02% | 13.87% | 2% | 80.04% | 9.28% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2014 | 2360 | 79.30% | 18.80% | 17.94% | 33.74% | 35.35% |
| Rwanda | 2006 | 182 | 91.98% | 30.66% | 2.36% | 58.49% | 11.32% |
| | 2011 | 241 | 88.80% | 45.23% | 2.07% | 21.99% | 12.03% |
| Senegal | 2003 | 262 | 86.26% | 32.06% | 8.02% | 13.74% | 16.41% |
| | 2007 | 506 | 94.88% | 7.36% | 3.68% | 60% | 9.92% |
| South Africa | 2003 | 603 | 92.37% | 60.53% | 0% | 57.88% | 49.09% |
| | 2007 | 937 | 95.85% | 20.91% | 3.78% | 84.48% | 3.6% |
| Tanzania | 2006 | 419 | 94.75% | 22.43% | 5.73% | 65.16% | 21.48% |
| | 2013 | 813 | 54.61% | 9.35% | 4.43% | 14.39% | 9.23% |
| Uganda | 2006 | 561 | 98.05% | 14.56% | 3.73% | 69.45% | 12.61% |
| | 2013 | 762 | 87.66% | 26.12% | 10.76% | 23.62% | 14.83% |
| Zambia | 2007 | 485 | 96.90% | 15.70% | 2.27% | 75.83% | 5.99% |
| | 2013 | 720 | 89.72% | 13.89% | 5.14% | 14.17% | 13.89% |

Source: Author's estimates using ES data

**Appendix 9: Percentage of Firms with access to Bank Financial Services**

| Country | Year | Overdraft | | Credit Line/Loan | | Checking/Saving Account | |
|---|---|---|---|---|---|---|---|
| | | YES | NO | YES | NO | YES | NO |
| Angola | 2006 | 2% | 98% | 4% | 96% | 80% | 20% |
| | 2010 | 12% | 88% | 10% | 90% | 87% | 13% |
| Botswana | 2006 | 36% | 64% | 31% | 69% | 96% | 4% |
| | 2010 | 54% | 46% | 52% | 48% | 99% | 1% |
| Burkina Faso | 2006 | 37% | 63% | 30% | 70% | 95% | 5% |
| | 2009 | 58% | 42% | 29% | 71% | 98% | 2% |
| Cameroon | 2006 | 41% | 58% | 43% | 57% | 95% | 5% |
| | 2009 | 57% | 43% | 35% | 65% | 93% | 7% |
| DRC | 2010 | 15% | 85% | 14% | 86% | 74% | 26% |
| | 2013 | 24% | 76% | 9% | 91% | 56% | 44% |
| Ghana | 2007 | 15% | 85% | 19% | 81% | 83% | 17% |
| | 2013 | 23% | 77% | 22% | 78% | 95% | 5% |
| Kenya | 2007 | 42% | 58% | 41% | 57% | 94% | 6% |
| | 2013 | 36% | 64% | 39% | 61% | 91% | 9% |
| Malawi | 2009 | 56% | 44% | 40% | 60% | 98% | 2% |
| | 2014 | 41% | 59% | 28% | 72% | 82% | 18% |
| Mali | 2007 | 7% | 93% | 8% | 92% | 71% | 29% |
| | 2010 | 48% | 52% | 17% | 83% | 85% | 15% |
| Niger | 2005 | 50% | 50% | 48% | 52% | 94% | 6% |
| | 2009 | 73% | 28% | 40% | 60% | 97% | 3% |
| Nigeria | 2007 | 7% | 93% | 4% | 96% | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2009 | 17% | 83% | 14% | 86% | | |
| | 2014 | 4% | 96% | 8% | 92% | 70% | 30% |
| Rwanda | 2006 | 34% | 66% | 35% | 65% | 81% | 19% |
| | 2011 | 47% | 53% | 49% | 51% | 74% | 26% |
| Senegal | 2003 | 51% | 49% | 41% | 59% | 94% | 6% |
| | 2007 | 13% | 87% | 11% | 89% | 79% | 21% |
| South Africa | 2003 | | | | | | |
| | 2007 | 53% | 47% | 29% | 71% | 96% | 4% |
| Tanzania | 2006 | 17% | 83% | 20% | 80% | 85% | 15% |
| | 2013 | 10% | 90% | 19% | 81% | 75% | 25% |
| Uganda | 2006 | 14% | 86% | 18% | 82% | 87% | 13% |
| | 2013 | 10% | 90% | 21% | 79% | 87% | 13% |
| Zambia | 2007 | 39% | 61% | 16% | 84% | 93% | 7% |
| | 2013 | 19% | 81% | 14% | 86% | 89% | 11% |

Source: Author's estimates using ES data

**Appendix 10**: **Base Regression Results (OLS): Whole Sample with Country Dummy**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable: Total Factor Productivity: Labour Cost and Net Book Value of Machines. Land and Buildings (Log Value) | | | | |
| Overdraft | -0.060*** | -0. 053*** | -0. 078** | -0.152*** |
| | (0.056) | (0. 051) | (0.053) | (0. 053) |
| Credit Line/Loan | -0.012** | -0.006* | -0.012 | - 0.001 |
| | (0.053) | (0.054) | (0.054) | (0.053) |
| Checking Account | -0.070*** | -0.167 ** | -0.131*** | - 0.139*** |
| | (0.057) | (0.059) | (0.058) | (0.058) |
| Moderate Obstacle | | 0.213*** | 0.176 *** | 0.131** |
| | | (0.063) | (0.062) | (0.062) |
| Major Obstacle | | 0.084 | 0.061 | -0.040* |
| | | (0.059) | (0.058) | (0.058) |
| Very Severe Obstacle | | -0.162* | -0.181*** | -0.275*** |
| | | (0.063) | (0.063) | (0.063) |
| Small Firm | | | -0.012** | -0.033** |
| | | | (0.071) | (0.069) |
| Medium Firm | | | 0.028 | -0.010 |
| | | | (0.069) | (0.067) |
| Age of Firm (Log) | | | -0.269*** | -0.265*** |
| | | | (0.051) | (0.050) |
| Managerial Experience (Log) | | | 0.104*** | 0.079*** |
| | | | (0.031) | (0.031) |
| GDP Per Capita (Log) | | | | 0.373*** |
| | | | | (0.032) |
| Domestic Credit | | | | 0.002*** |
| | | | | (0.0005) |
| Observations | 2665 | 2,430 | 2401 | 2401 |
| R-Squared | 0.0089 | 0.0156 | 0.0238 | 0.0696 |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively

**Appendix 11: Stochastic Frontier Normal/Half Normal Model Regression**

Dependent Variable: Cobb-Douglas Production Function

| Variables | Coefficients |
|---|---|
| Material Cost ( $\beta_1$ ) (Log) | 0.569*** |
| | (0.015) |
| Labour Cost ($\beta_2$ ) (Log) | 0.556*** |
| | (0.017) |
| Overdraft | -0.464*** |
| | (0.113) |
| Credit Line/Loan | -0.433*** |
| | (0.103) |
| Checking Account | -0.002 |
| | (0.302) |
| Moderate Obstacle | -0.795*** |
| | (0.198) |
| Major Obstacle | -0.902*** |
| | (0.218) |
| Very Severe Obstacle | -0.326 |
| | (0.206) |
| Small Firm | -0.467*** |
| | (0.117) |
| Medium Firm | -0.323*** |
| | (0.119) |
| Age of Firm (Log) | -0.111 |
| | (0.093) |
| Managerial Experience (Log) | 0.073 |
| | (0.061) |
| Observations | 4682 |
| Log Likelihood | -6477.0563 |
| Wald Chi2 | 513362.44 |
| Probability > chi2 | 0.0000 |

Note: Standard errors in brackets. ***, **,* denotes significance levels at 1%, 5% and 10% respectively